ROCK PRODUCTS

JUNE, 1943

THE INDUSTRY'S RECOGNIZED AUTHORITY

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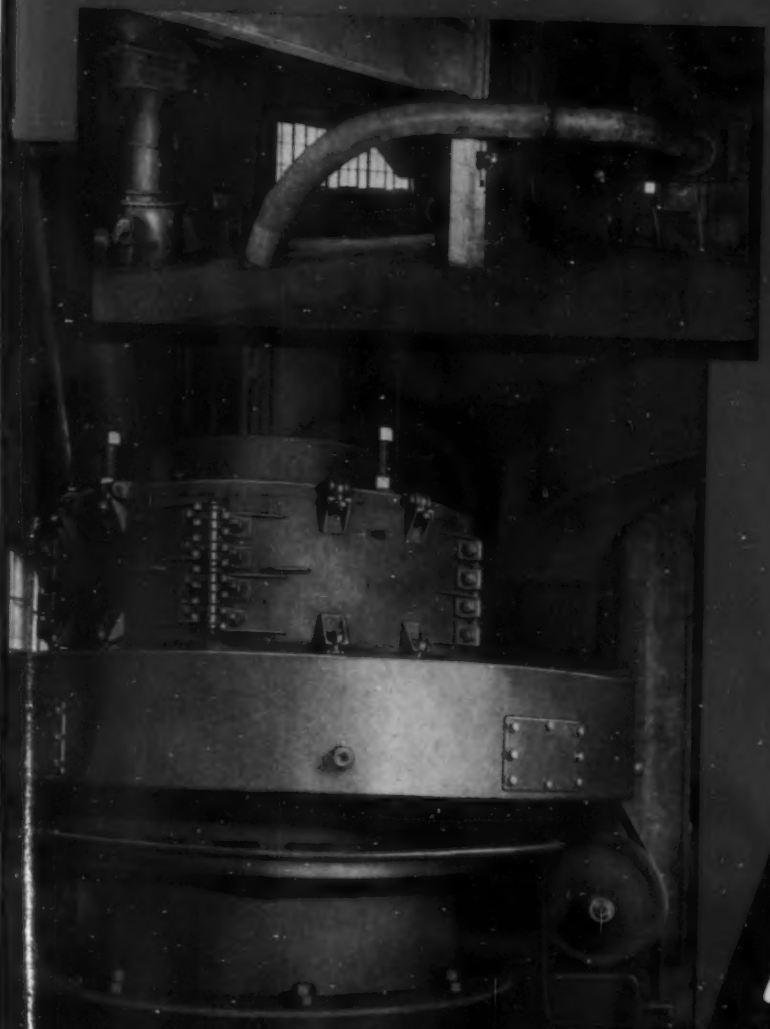
JUN 21 1943

World's Largest Direct-Fired Cement Kiln served by a B & W Type E PULVERIZER



This pulverizer, at the plant of Marquette Cement Mfg. Co., Des Moines, Iowa, is the largest direct-firing pulverizer so far installed in a cement plant.

The kiln is 11 ft. 6 in. by 475 ft. (wet process); output averages approximately 3200 bbl. per day. Approximately 8 tons of Iowa coal are pulverized every hour, moisture in the coal running as high as 20 per cent.

The small photograph shows the firing floor and entrance to the kiln.

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY

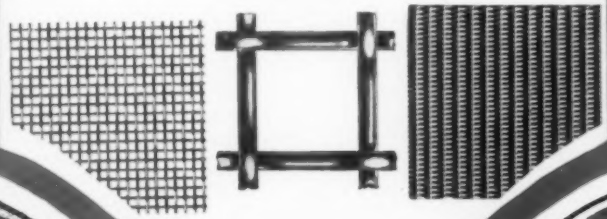
85 LIBERTY STREET, NEW YORK, N.Y.

LUDLOW-SAYLOR

"Perfect"

Wire Cloths and Screens of Super-Loy, Steel, Galvanized Steel, Stainless Steel, Phosphor Bronze, Brass, Copper, Monel, Aluminum,

—any special metal, for any sort of service.



The background at top of page shows the "Perfect" Double-Crimp Weave. The small cuts in the center panel show Twilled Weave, Arch-Crimp Weave and Dutch Weave. The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving. Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS

JUN 21 1943

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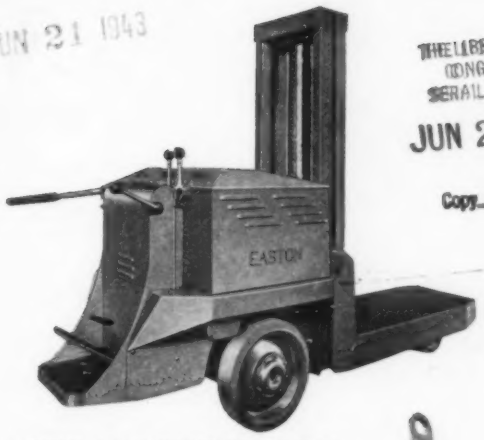


EASTON TLC-6 — TIER-LIFT ELECTRIC TRUCK CAPACITY — 6,000 LBS. SERVING THE NAVY AND OTHER ARMED FORCES, ALSO WAR INDUSTRIES. BULLETIN 162.

EASTON MODEL 1614 — INDUSTRIAL TRAILER. CAPACITY — 30,000 LBS. EASTON TRAILERS ARE HANDLING GUNS AND SHELLS IN MUNITIONS PLANTS. BULLETINS 191 AND 192.

EASTON ROCKER DUMP TRAILER SIMILAR UNITS ARE SERVING AIRCRAFT AND OTHER WAR INDUSTRIES ALSO ROCKER DUMP CARS

Keep moving WITH EASTON

VICTORY MODEL ELECTRIC TRUCKS

★ To help conserve critical materials EASTON has limited production of electric trucks to six standard government-approved models: the low-lift, the tier-lift, the low-platform and the high-platform trucks of 4,000 pounds capacity; and the 6,000 pound low-lifts and tier-lifts. Let EASTON engineers demonstrate how one of these six basic models can be adapted to your requirements.

INDUSTRIAL CARS AND TRAILERS

★ EASTON cars and trailers are used in almost every industrial haulage operation — handling raw materials at their source, moving parts and finished products through production processes, speeding up work at distribution centers. Capacities range from 4,000 pounds to 250 tons. Every EASTON car and trailer is a Victory Model, using fewer critical materials wherever possible and built from the ground up for "E-Plant" efficiency.

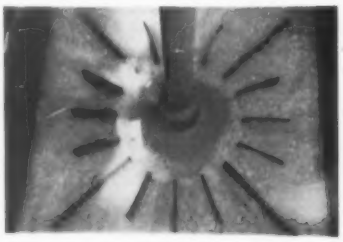
ENGINEERING COUNSEL

★ EASTON specializes in engineered material handling equipment designed to meet specific operating conditions. For new ideas in material handling, for repairs, or for replacements write to: Engineering Counsel, Easton Car & Construction Company, Easton, Pennsylvania.

BELOW: EASTON DOUBLE-BODIED TANDEM SEMI-TRAILER. ON SEMI-TRAILERS SEE BULLETINS Nos. 173 AND 175.

B-1003

AGITAIR



Looking down into the Agitair Cell. Aeration is complete.

Flotation Equipment for Non-Metallic Processes

Cement
Phosphate
Magnesite
Fluorspar
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Graphite
Talc
Mica
Barite
Spodumene
Coal

The flotation process is being utilized in the treatment of all of the above indicated products and the Agitair Flotation Machine is ideal for utilization in flotation treatment schemes applicable to non-metallic materials.

Our testing laboratory is well equipped and staffed to make investigations as to the applicability of the flotation process to your product. Write today for information as to how we may serve you and provide for greater purity in your finished product.

Agitair Bulletin 421 is yours on request

THE GALIGHER COMPANY
48 South 2nd East
SALT LAKE CITY, UTAH

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Just 3 Words

PLEDGED
CONSTRUCTION EQUIPMENT CONSERVATION

—but what a whale of a lot they mean!

Photo courtesy of Broderick & Bascom Rope Co.

C-o-n-s-t-r-u-c-t-i-o-n
E-q-u-i-p-m-e-n-t
C-o-n-s-e-r-v-a-t-i-o-n

. . . that sums up a big part of today and tomorrow's job

- New construction equipment is hard to get—that means you'll have to take care of what you have.
- Time-consuming breakdowns must be avoided as much as possible; emergency repairs must be made quickly, and frequently without the usual type of critical materials and parts.
- Jobs *must* be completed on time or ahead of schedule—that means extra work—faster, more skillful operation.

How About You?

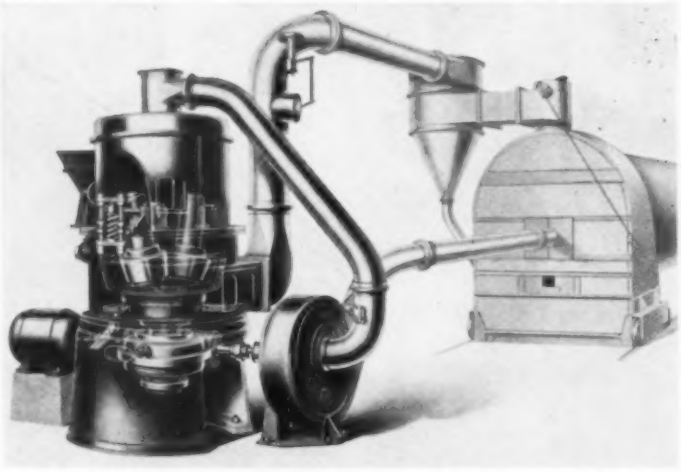
Have you joined the ranks of the hundreds of owners and operators who are doing their darndest to do more with what they've got . . . to make their equipment last longer and work faster? You can tell these men by this 5" red, white and blue emblem on their trucks, tractors, bulldozers, shovels, cranes and scrapers. If you want to show others that you are conserving, write for one or more of these free emblems today.

THE THEW SHOVEL COMPANY
Lorain, Ohio

THEW-LORAIN CRANES • SHOVELS DRAGLINES • MOTO-CRANES

RAYMOND *Four-Star Equipment*

FIRING ROTARY KILNS with the BOWL MILL



To modernize your lime plant, begin with the Bowl Mill . . . and get maximum firing efficiency. It handles any grade or moisture coal . . . dries it in the mill . . . and maintains a uniform grind. It gives wide flexibility in control with noiseless, dustless, automatic operation, and record low maintenance.

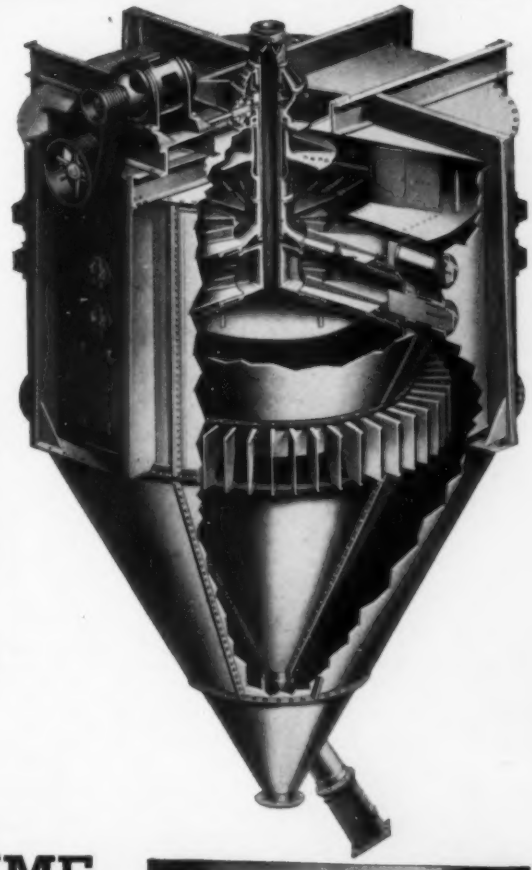
Results: Increased kiln production, superior quality lime, and big savings in fuel costs. Industry's wholehearted acceptance of the Bowl Mill is evidenced by hundreds of installations with a high ratio of more than 30% repeat orders. It's a "natural" for direct firing rotary kilns, burning lime, cement, dolomite or magnesite. *Write for Catalog No. 43.*

PULVERIZING HYDRATED LIME

For meeting today's close specifications on high purity hydrated lime, equip your plant with the Raymond Automatic Pulverizer with *whizzer separator* and *throw-out attachment.* It receives the lime from the hydrate bin, disintegrates and classifies the material, rejects the hard particles or other impurities, and delivers a uniform finished product of super quality. Changing the speed of the whizzer controls the classification and any fineness can be obtained from agricultural lime to superfine chemical hydrate, testing 99.5% through 400-mesh . . . without the loss of good hydrate. *See Catalog No. 37.*

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, Inc.

for . . . LIME PRODUCTION



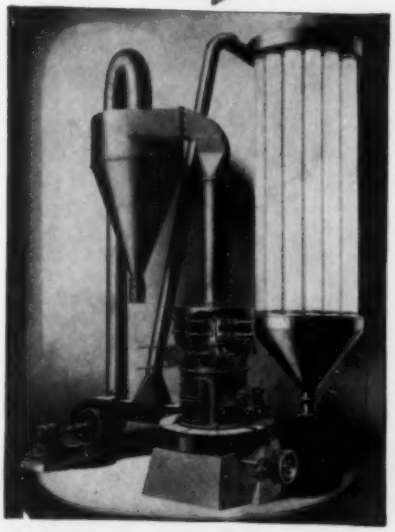
SEPARATING HYDRATED LIME

The double whizzer . . . a feature built into the Raymond Mechanical Air Separator, as indicated by red stars at the right . . . makes this machine well adapted for classifying hydrated lime, especially where you want to produce the finer grades.

You can set the Raymond Separator to take the feed direct from the hydrator, provided the lime is thoroughly hydrated, otherwise it should come from curing bins. The Separator will skim off an exceedingly high percentage of the fines, because the whizzer blades help to break up the lumpy material for easier and more complete separation. Then it discharges the oversize to an Automatic Pulverizer for further reduction and final recovery of the remaining good lime.

For further details of this operation, see Catalog No. 45.

GRINDING BURNT LIME, AGSTONE, DOLOMITE, LIMESTONE FILLERS



For heavy-duty pulverizing . . . where you want big tonnages at extremely low power costs . . . the equipment to choose is the Raymond High Side Roller Mill with the double whizzer separator, shown at the right.

First you have wide range fineness control, instantly adjustable while the mill is running . . . all the way from 60% minus 100-mesh up to 99.99% through 325-mesh, simply by shifting a speed lever on the whizzer drive.

Second, you have the option of a throw-out attachment on this mill for removing impurities and refining the product. It is the standard mill for making limestone fillers, used in various industries. *Write for Catalog No. 51.*

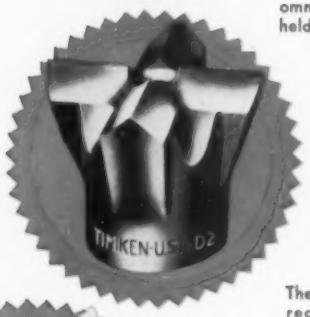
1307 North Branch Street, CHICAGO

Sales Offices in Principal Cities • Canada: Combustion Engineering Corp., Ltd., Montreal

A Complete Range of Timken Bits

Victory will release a tremendous backlog of construction contracts. Get set now to make the most of this opportunity by putting your drilling work on a low-cost high-speed basis.

The H series, a general purpose bit recommended for hand held hammers.



The D series bit is recommended for use with wagon drills for deep hole drilling.

The R series bit used in soft formations such as limestone and sandstone.

The F series, a small gauge heavy duty type used in mining and for other purposes where small holes and fast drilling is desired.

The M series, a general purpose bit, largely used in mining with mounted machines.

One for every type of drilling job

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

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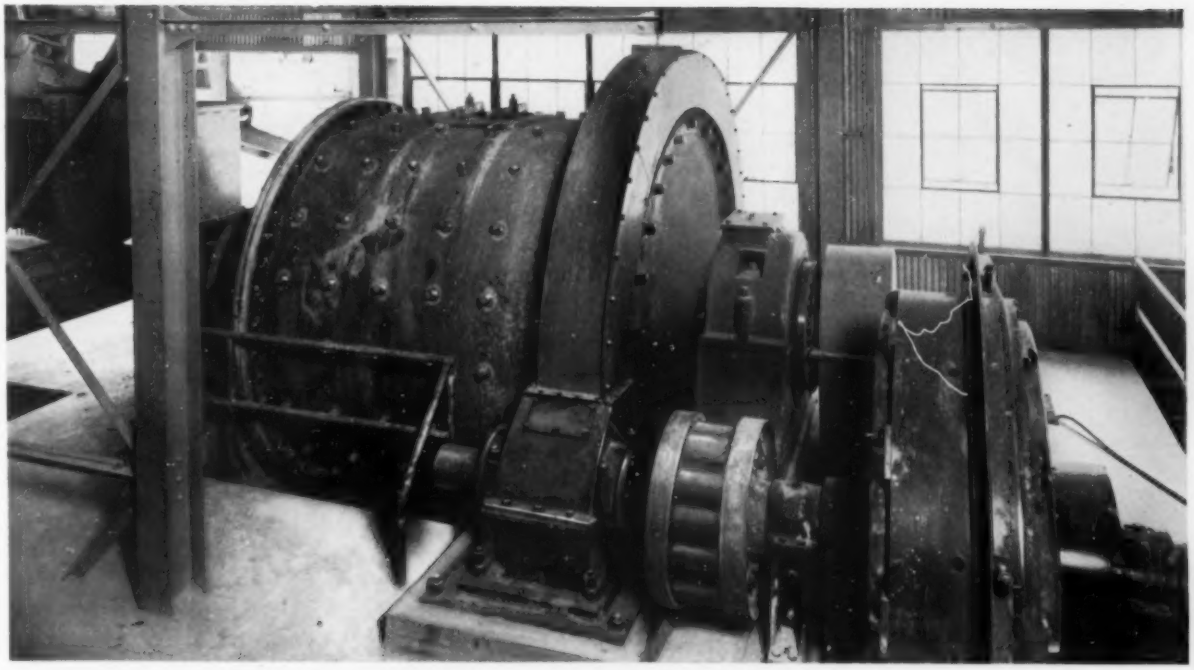
ROCK BITS

TRAYLOR
GRINDING MILLS



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Pug Mills
Wash Mills
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Rotary Screens
Elevators

Whether your grinding specifications call for "coarse," "medium," "fine" or "extra fine" product, a mill with "TRAYLOR" on the name plate will give you the most satisfaction, because it will deliver the quantity you need, of the exact character required, at minimum unit cost and low maintenance expense. Added to these advantages, Traylor Grinding Mills are so designed and built as to afford the utmost ease of operation.

This is not mere "sales talk." Hundreds of engineers and operators in the cement, chemical and other process industries have proved these facts to their own satisfaction, by using Traylor Mills. So much so is this the case, that in numerous instances of plant revamping or new plant construction, among the earliest specifications have been "grinding mills by Traylor."

Short mills or long mills, large diameter or small, ball mills, tube mills, pebble mills, compartment mills or rod mills—whichever of them fits your job best, it is standard with Traylor. Or, if you need a specially designed mill, Traylor is best qualified to build it for you. We sell service as much as we do machines, and we are anxious to work with you. Call on us! Our technicians are available at any time.

Write for Bulletin 2103

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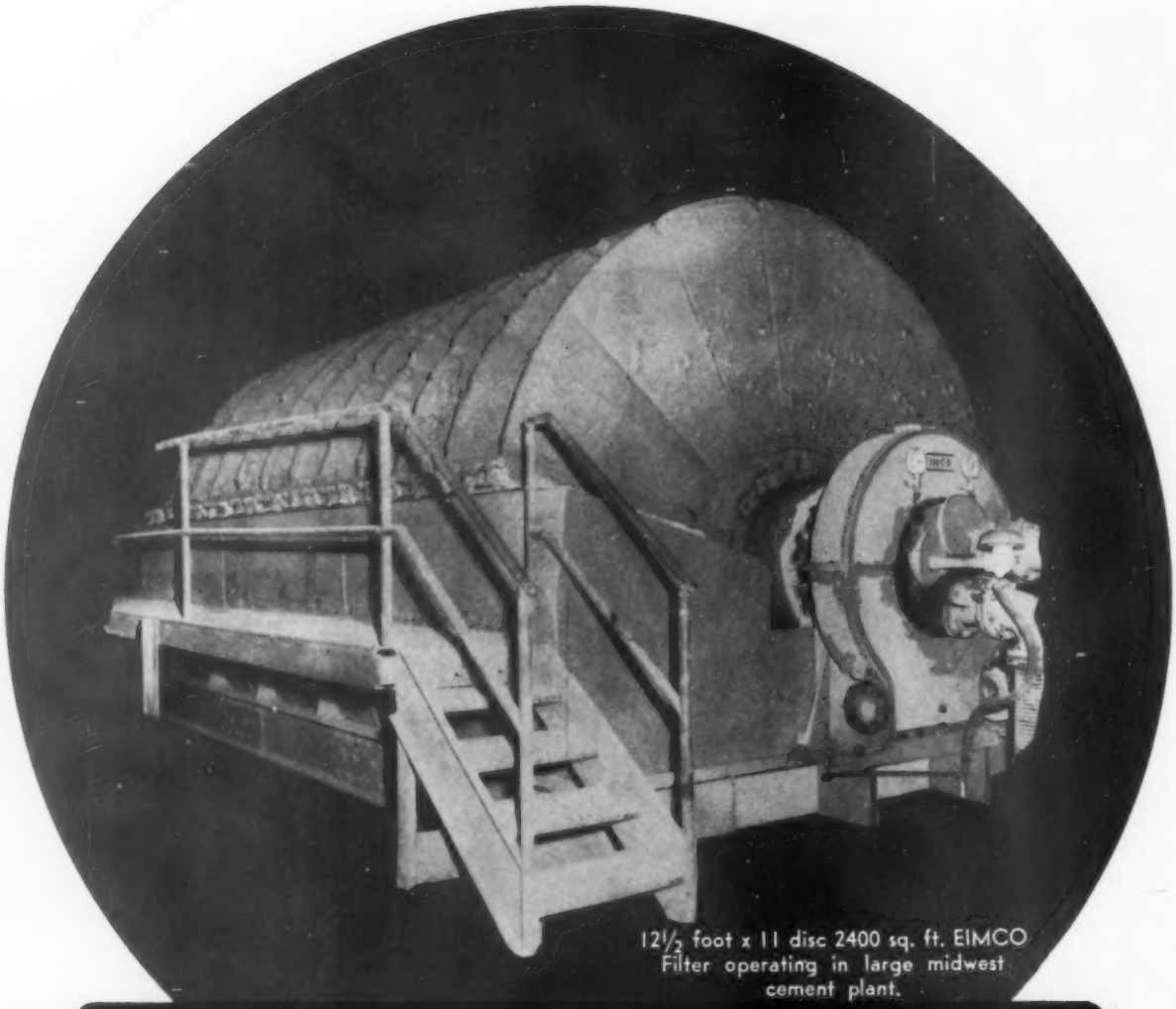

12½ foot x 11 disc 2400 sq. ft. EIMCO Filter operating in large midwest cement plant.

Eimco Slurry Filters

Eimco Cement-Slurry Filters are designed, engineered and built according to the specific requirements of each job. With Eimco Custom-Built filters in the plant you are assured the following advantages:

1. Low coal consumption per barrel of clinker produced.
2. An increase in the capacity of each kiln fed through Eimco Slurry Filters.
3. Waste heat boiler efficiency will be increased.
4. Grindability of raw material will be increased.
5. A more accurate control of raw material uniformity (composition).

Write your nearest Eimco office for detailed information or call in an Eimco Engineer for consultation. You will be under no obligation.

THE EIMCO CORPORATION

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TELSMITH

CRUSHING AND SCREENING PLANT

U. S. Army Engineers are building a huge dam in Tennessee. It will require 1,500,000 tons of aggregate—4 sizes of crushed rock: 3″ - 6″, 1½″ - 3″, 3/16″ - ¾″, minus 3/16″; and one size of sand.

To produce this material, Ralph E. Mills Co., of Roanoke, Va., opened a quarry at the dam site. The rock is a high calcium limestone. Telsmith designed the complete crushing and screening plant, and furnished most of the equipment. Capacity is in excess of 200 tons per hour.

On war jobs, equipment as well as men must produce more *and faster* without "cracking" under the strain. For years Telsmith has been building equipment that can turn it out, without taking time out. Telsmith complete sand and gravel and rock crushing plants are a *known quantity* to miners, contractors and aggregate producers.

That's why Telsmith gets the call on so many war jobs—to build army and navy air bases, dry docks, roads, dams, and other big construction projects.

That's why your Uncle Sam is now taking most of the Telsmith equipment being built. It's going overseas, to build for the armed forces' needs.

You can get Telsmith equipment—for war work now—and after the war for all your needs. Get Bulletin Q-11 today.

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Q-9

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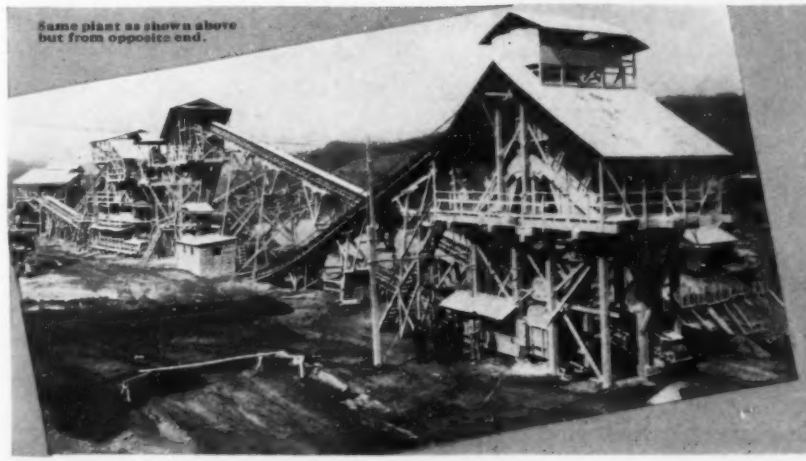

TELSMITH
Quarry Plant Equipment

One	48″ x 12′ Telsmith Heavy-Duty Apron Feeder
One	36″ x 180′ Telsmith Belt Conveyor
One	48″ x 7′ Telsmith Plate Feeder
One	36″ x 182′ Telsmith Belt Conveyor
One	16-B Telsmith Primary Breaker
One	24″ x 78′ Telsmith Belt Conveyor
One	24″ x 75′ Telsmith Belt Conveyor
One	No. 48 Telsmith Gyrasphere Secondary Crusher
One	36″ x 131′ Telsmith Belt Conveyor
Two	4′ x 12′ Telsmith Double Deck Pulsator Screens
Two	18″ x 21′ Telsmith Belt Conveyors
Two	4′ x 10′ Telsmith Single Deck Pulsator Screens
Twelve	Telsmith Bin Gates
Three	18″ Telsmith Belt Conveyors
One	18″ x 105′ Telsmith Belt Conveyor

What Happens When a V-Belt Bends

FIG. 1

FIG. 2

435

This Test Shows the Very Real Advantage of the CONCAVE SIDE!

Grip the side-walls of *any* V-belt as it bends. You will *feel* its sides change shape. The top of the belt becomes narrower because it is under tension. The middle of the side-wall bulges out. You will see that a *straight-sided* V-belt must assume, when it bends, the shape shown in figure 1 (on the left)—a shape that *doesn't fit the sheave groove.*

Now try the same test with a Gates Vulco Rope. You will find that the *same shape change merely straightens* the precisely engineered Concave Side (See figure 2). There is no side-bulge. This insures uniform side-wall wear:—*longer life!* Moreover, the full side-wall of the belt uniformly grips the pulley. It therefore carries heavier loads without slipping—a saving in belts and also a saving in power.

Only belts built by Gates are built with the Concave Side, a Gates patent.

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

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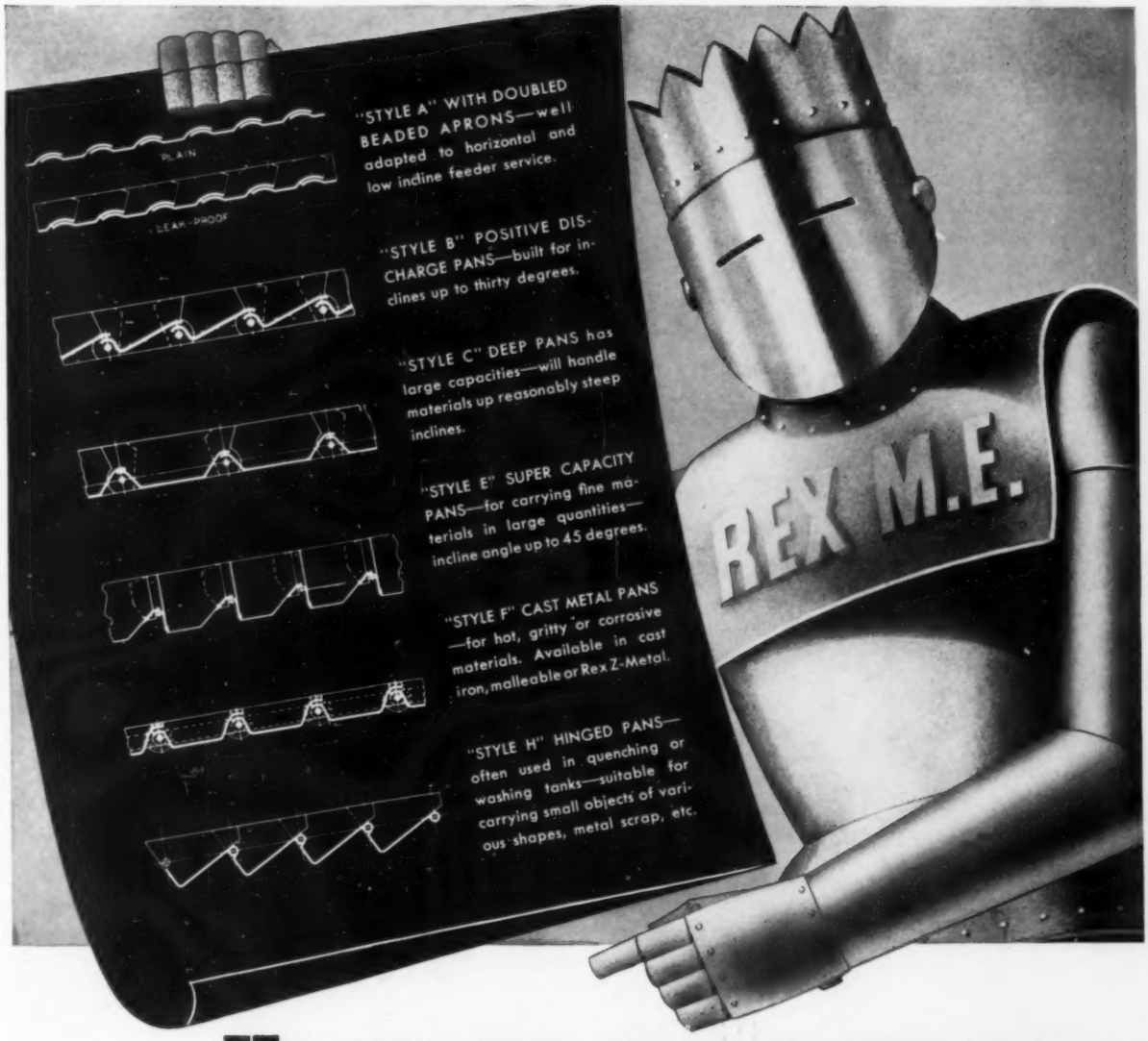

PLAIN
LEAK-PROOF
"STYLE A" WITH DOUBLED BEADED APRONS—well adapted to horizontal and low incline feeder service.
"STYLE B" POSITIVE DISCHARGE PANS—built for inclines up to thirty degrees.
"STYLE C" DEEP PANS has large capacities—will handle materials up reasonably steep inclines.
"STYLE E" SUPER CAPACITY PANS—for carrying fine materials in large quantities—incline angle up to 45 degrees.
"STYLE F" CAST METAL PANS—for hot, gritty or corrosive materials. Available in cast iron, malleable or Rex Z-Metal.
"STYLE H" HINGED PANS—often used in quenching or washing tanks—suitable for carrying small objects of various shapes, metal scrap, etc.
REX M.E.

HE FITS THEM TO YOUR FLOW SHEET...

WHERE bulk materials must be handled continuously, Rex apron conveyors do it at remarkably low cost.

They are products of Rex Mechanical Engineering—Rex M. E.—which has provided them with Rex equalizing saddle and outboard roller construction to minimize wear. There are 6 major types for varying capacities, discharge conditions, inclines and temperatures.

Rex Mechanical Engineering—Rex M. E.—does more than design and manufacture them. He also provides the information and technical services required by production engineers for solving problems of capacity, application and selection.

For this service he maintains a field organization. Many of the men in it have served their apprenticeship in his drafting rooms and plants. For additional counsel, the territorial men call on specialized designing engineers in Milwaukee, who have the advantages of national experience.

Rex apron conveyors for continuous handling are available in capacities that range from a few tons to hundreds of tons per hour.

They are one of many types provided by Rex M. E. for the great work in which all engineers are engaged. That work is to produce a maximal result at minimal cost and waste. Chain Belt Company, 1649 W. Bruce St., Milwaukee, Wis.

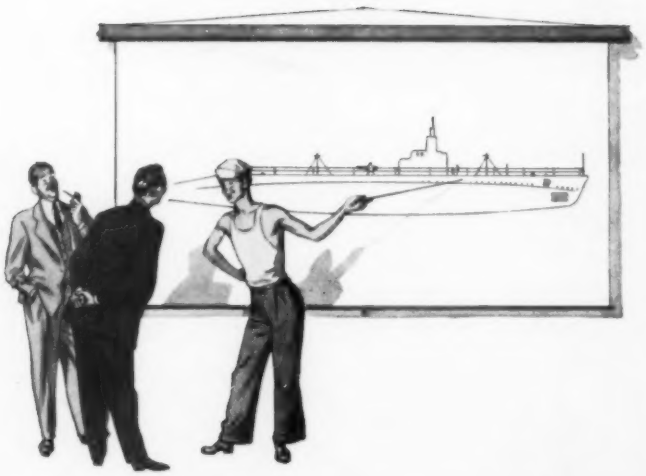
REX

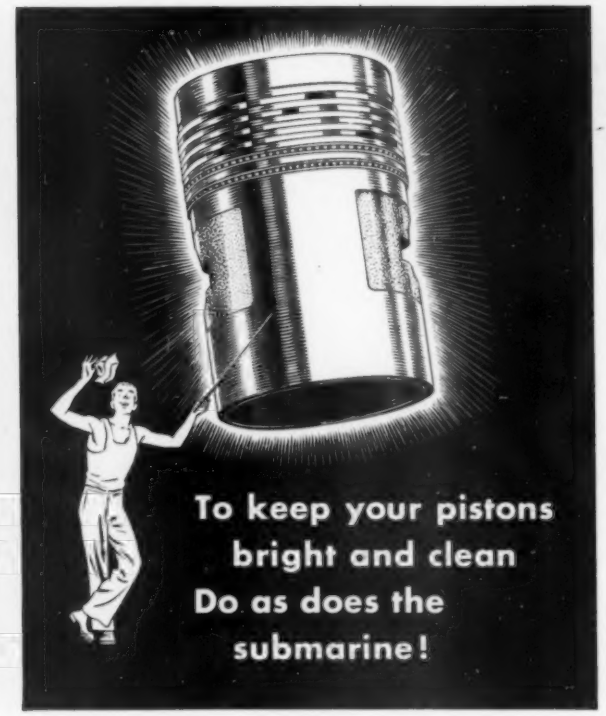
MATERIALS HANDLING EQUIPMENT

UNITS • ASSEMBLIES • INSTALLATIONS

CHAIN BELT COMPANY *OF MILWAUKEE*

This submarine of the U. S. fleet Must keep its Diesels running sweet . . .





. . . use RPM DELO, used by the United States Navy to lubricate the powerful Diesels in our submarines and other warships.

These drawings, from actual photographs in our files, reveal the difference between two pistons, each run 846 hours in a test. One was lubricated with the finest straight mineral oil available, yet its rings were stuck with gum and the skirt was varnished.

The other, lubricated by RPM DELO, was protected by the non-corrosive, anti-oxidant properties that make "RPM" the world's finest Diesel oil. Put RPM DELO to the test in your own Diesels. You, too, will see how it retards ring-sticking and varnishing.

RPM DELO

ORDER RPM DELO FOR YOUR DIESELS

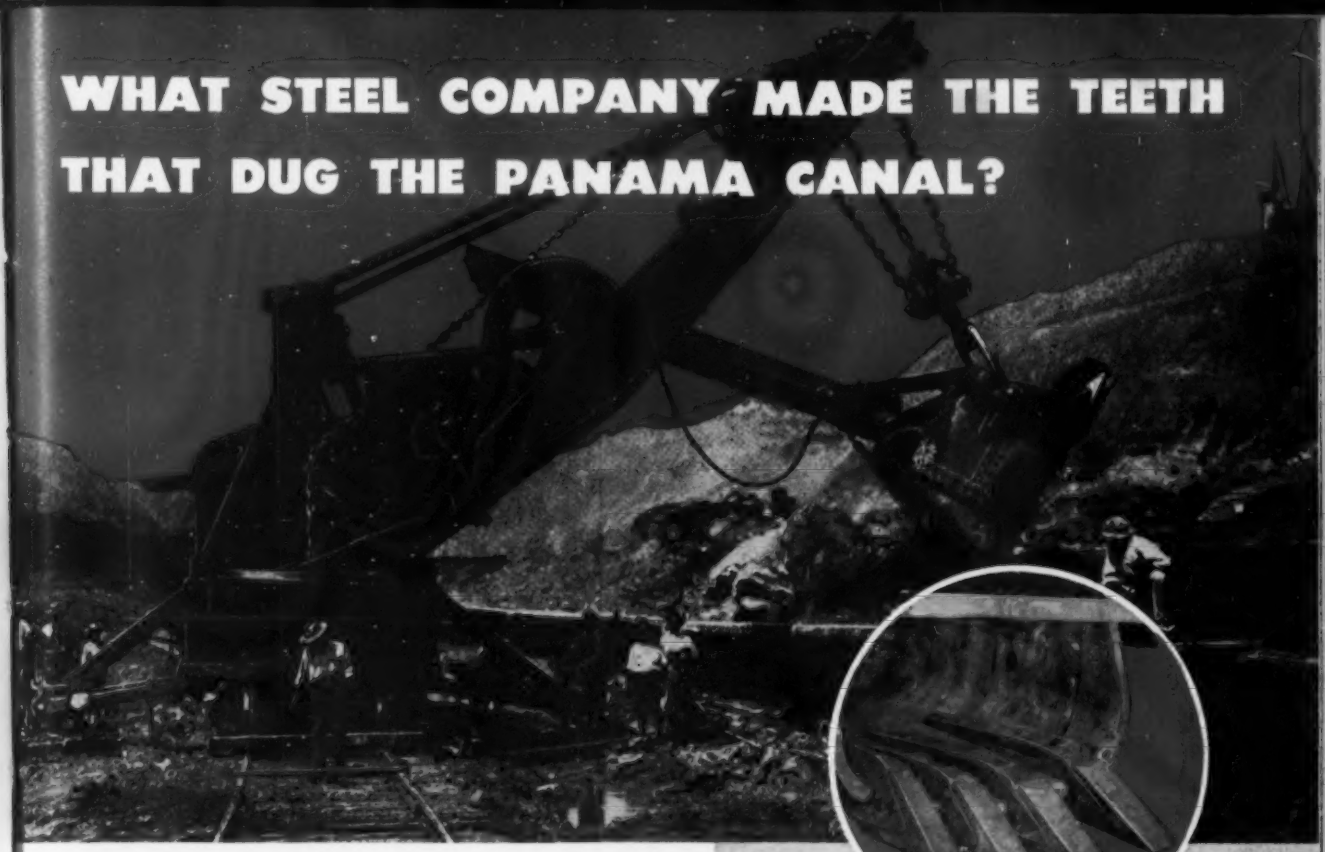
RPM DELO is marketed under the following names:

RPM DELO • Caltex RPM DELO • Kyso RPM DELO
Signal RPM DELO • Imperial-RPM DELO • Sohio RPM DELO
CONCENTRATE

Ask your Diesel engine manufacturer or distributor for the RPM DELO supplier in your vicinity

STANDARD OIL COMPANY OF CALIFORNIA

WHAT STEEL COMPANY MADE THE TEETH THAT DUG THE PANAMA CANAL?



THE digging of the "Big-Ditch" was—and still is—one of the great engineering triumphs of all time. Its construction involved the solution of many difficult problems and pioneered many advances. Among these, was the adoption of TISCO "Panama" patented two-part Teeth for the steam shovels used in excavating. Two big advantages were gained: The great wear-resistance of TISCO Hadfields Manganese Steel and the easy, quick replacement or reversibility of worn teeth.

Hadfields Manganese Steel was first produced in America by this company (1892). It has supplied the solution to countless applications requiring resistance to heavy abrasion and impact, such as railway trackwork, mine and quarry equipment, paper making machinery, dredges, shovels and many industrial uses.

240,000,000 cubic yards excavated . . . and most of it dug with TISCO "Panama" DIPPER TEETH

LEFT. *British tank equipped with TISCO Manganese Steel Tank Treads.*

Taylor-Wharton Products

Manganese Steel Castings • Alloy Castings and Forgings • High Pressure Gas Cylinders • Manganese-Nickel Welding Rod • Alnico Permanent Magnets Special Trackwork

FOUNDED TW 1742

Taylor-Wharton Iron & Steel Co.

HIGH BRIDGE, NEW JERSEY • EASTON, PENNSYLVANIA

Somewhere south of the equator a sturdy 1-ton Mack does ground duty for one of Pan American Airways' famous flying clippers . . . Sketched by Peter Helck.

LITTLE CHIP OFF A RUGGED OLD BLOCK . . .

You don't have to work long with trucks—either as owner or driver—to see why the admiring phrase, "Built like a Mack truck" has established itself in America's language. On the heavy punishing jobs it has been known for years that a Mack's your *best* truck in the end because it's *more* truck to begin with. The performance of little Mack pick-up and delivery trucks in wartime transportation is proving that every Mack, no matter what size, is truly a chip off the old block.

Mack Trucks, Inc., Empire State Bldg., N. Y. City. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J. Factory branches and dealers in all principal cities for service and parts.

Mack

TRUCKS

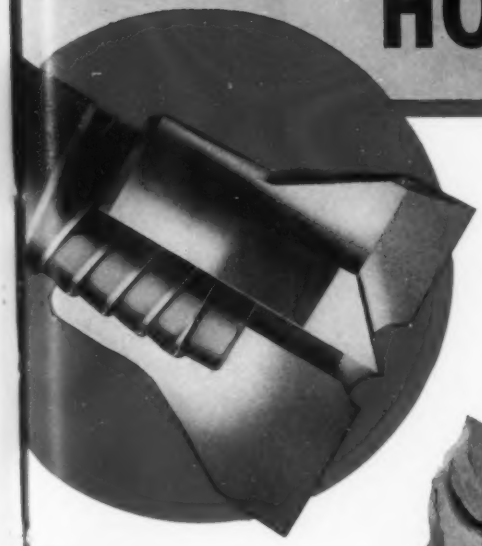
FOR EVERY PURPOSE

ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY...IF YOU PLAN TO GET ONE, YOU'RE WISE!

HOW TO DRILL *FASTER*



YOU CAN REMOVE LESS ROCK YET BOTTOM THE HOLE AT THE DESIRED SIZE BY *using* JACKBITS

All plants of Ingersoll-Rand Company are flying the Army-Navy "E" awarded "for high achievement in the production of war materials."

Experience has shown that the user of Jackbits can frequently use bits of smaller gauge and still bottom the desired size hole. On many jobs we recommend only 1/16" gauge changes instead of the usual 1/8". The benefits of this practice are: Faster drilling speed; reduced strain on drill steel; and lower rock drill upkeep. For example, on one very large job the drilling speed increased 37% when Jackbits were put to work.

JACKBITS HOLD THEIR GAUGE

Jackbits are made of hard, wear-resistant steel, scientifically heat-treated and hardened in automatic furnaces and quenching devices. These advanced methods of manufacture coupled with the Jackbit design, backed by more than 70 years of rock drill experience are responsible for this modern bit which holds its gauge longer and permits holes to be collared smaller. In addition, there is such a wide range of designs and sizes of Jackbits that precisely the right bit can be selected for each job. When Jackbits are reconditioned with Ingersoll-Rand equipment the original accuracy of the manufactured bit is maintained.

15-224

his sketch shows why ackbits increase drilling eed. The shaded area is e rock that does not have be drilled when the unges are 1/16" instead 1/8"

Ingersoll-Rand

11 BROADWAY, NEW YORK, N.Y.

BURYING THE EMPIRE STATE

Two of the Cedarapids Marak Plants producing base material for airports for the Contractors Service Corporation.

BUILDING

with

TONS

Cedarapids

MOROK PLANTS

Built by IOWA

for VITAL DEFENSE JOBS

all produced by

CONTRACTORS SERVICE CORPORATION

Camp Hill, Pa.

THREE million, two hundred ninety two thousand, two hundred and seventy six tons of aggregate! Think that over! That's the output of the Cedarapids Morok plants of the Contractors Service Corporation of Camp Hill, Pa. Here's enough aggregate to bury the 1250 ft. height of the Empire State Building. All of this tremendous output went into seventeen vital defense projects including such jobs as Chambersburg, Pa., which alone involved over a million tons. The output was accomplished in two seasons despite the sixteen moves that the many projects involved—over a million tons the first season—over two million tons the second season!

It is figures like this that we want you to remember about Cedarapids. Such tonnage as this isn't secured with transportation delays, erection difficulties or "down time" on the job. In output figures of this kind, lies your assurance of the proved design of Cedarapids equipment.

There is a full range of Cedarapids plants for every output or material problem. No matter what you are considering if it has to do with aggregate reduction and preparation, call Iowa first. Come to Headquarters for Aggregate producing equipment.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Power And Speed For QUICK ACTION

On the War Front

No breakdowns... no letdowns... when *quick action* is needed with Koehring simple controls and smooth operation. Quick accessibility makes it easy for the operator of a Koehring Shovel to keep all parts of his machine well lubricated and clean. And smooth operation enables him to maintain top production for maximum output per shift. Keep your Koehring shovel in a natural smooth running condition for the duration. New equipment is now available only to the armed forces or highly essential military construction projects.

Depend on your Koehring distributor to help you keep your equipment operating. Care for your Koehring equipment NOW, so it will serve you tomorrow. Koehring distributors have genuine Koehring parts. Koehring parts warehouses are at your service.

KOEHRING COMPANY • *Milwaukee, Wisconsin*

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

P&H

ELECTRIC SHOVELS

DIGGING IN THE WAY THAT COUNTS!

WHETHER it's limestone, coal, or any of the metallic ores so urgently needed in war production — swift, steady digging is essential to produce today's larger volumes.

To assure it, every detail of design and construction in these P&H Electric Shovels follows the most approved and advanced engineering practices.

Continuous operation and lower costs per ton are the result of P&H's sixty years' experience in the application of electric power to the handling of heavy loads.

P&H

HARNISCHFEGER
CORPORATION

EXCAVATORS · ELECTRIC CRANES · ARC WELDERS · HOISTS · WELDING ELECTRODES · MOTORS

General Offices; 4410 West National Avenue
Milwaukee, Wis.

Start right...

this is the year that counts

THIS year America's capacity for production must make itself felt as never before. From our mines and forests, from oil fields and steel mills, from busy plants and factories must pour a flood of war materials that will swing the balance against the Axis. In this mighty effort, wire rope is indispensable.

As your part of this tremendous program, start right by using U·S·S American Tiger Brand Wire Rope. And treat it right so that it will deliver every bit of service that is in it.

American Tiger Brand is built tough, strong and long-lasting. No other wire rope will last longer under hard, continuous duty or is safer and easier to use. Its flexibility, its resistance to kinking and snarling, the fact that it is relaxed and inert make Tiger Brand Excellay Preformed always easy to handle. But to give *maximum* service and top efficiency it needs good care—and must have it today, when limited wire rope supplies have got to last longer.

Remember—every wire rope allowed to wear out prematurely, through neglect or misuse, is an unnecessary loss to the nation.

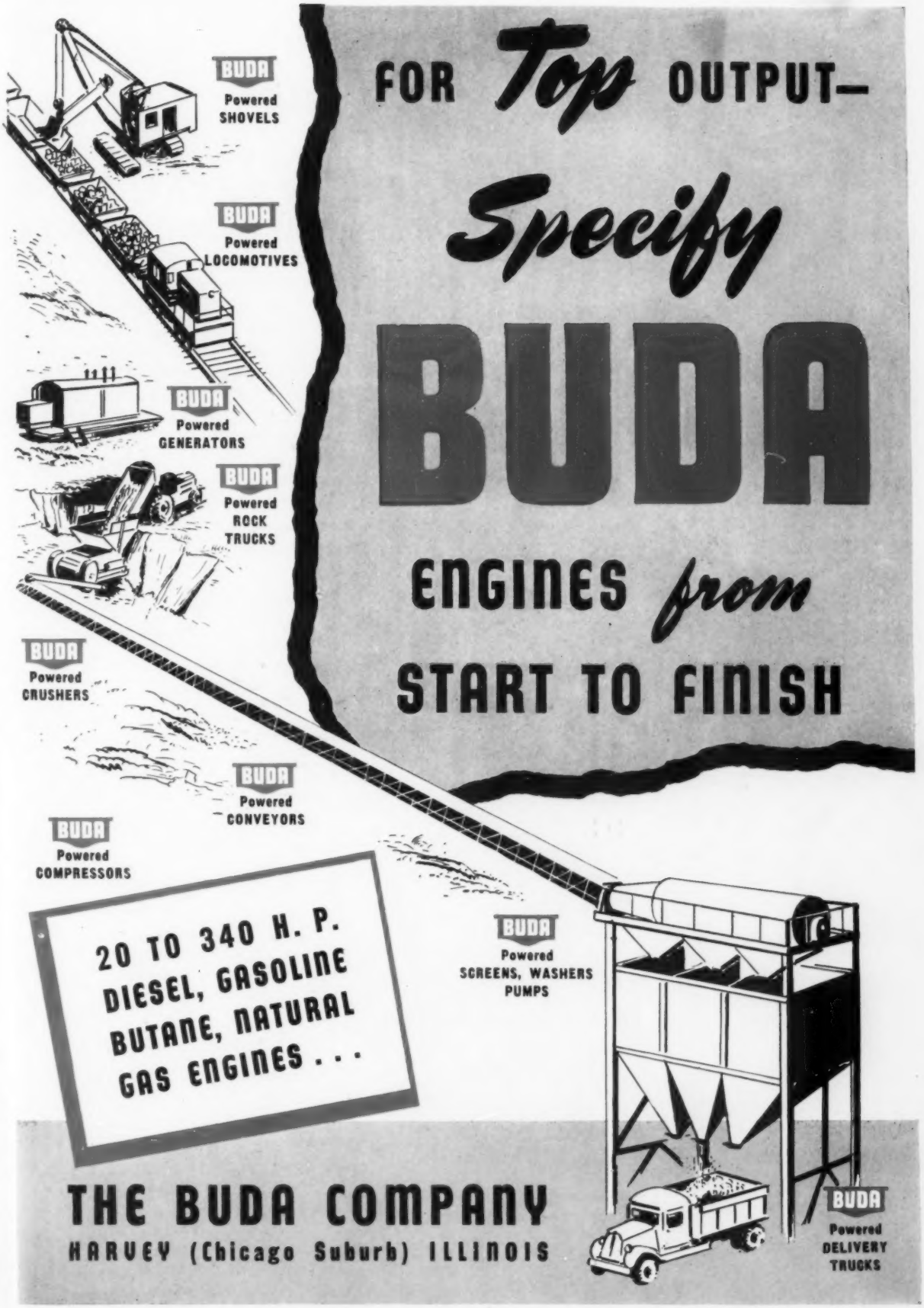
Here's a book you need right now

Every user of wire rope can get a lot of good ideas from this book. It's packed with easy-to-follow instructions, 48 pages of practical hints that will help avoid the common errors of handling and care which shorten rope life. Order as many copies as you need and get them into the hands of the right men.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York

Excellay Preformed

UNITED STATES STEEL



FOR *Top* OUTPUT—

Specify

BUDA

ENGINES *from*

START TO FINISH

20 TO 340 H. P.
DIESEL, GASOLINE
BUTANE, NATURAL
GAS ENGINES . . .

THE BUDA COMPANY

HARVEY (Chicago Suburb) ILLINOIS

Compressors, too, are working hard these days—

PROPER LUBRICATION IS MORE IMPORTANT THAN EVER

Built into Chicago Pneumatic horizontal stationary compressors are force feed cylinder lubrication and a highly efficient flood system of frame lubrication. These lubricating systems require only minimum attention on the part of the operator—a few simple check-ups which, however, should be made regularly.

Additional suggestions for maintaining compressor efficiency will appear in future advertisements. Watch for them.

HOW TO GET MAXIMUM OPERATION FROM YOUR CP COMPRESSORS

Bearings will not run without oil. Keep oil in crank case at level indicated on oil level gauge (illustrated). Drain, clean, refill reservoir at least once a month — more frequently if local conditions require.

← At least once a day, check the force feed cylinder lubricator, making sure reservoir is filled to required level. Make certain that lubricator is feeding only the number of drops per minute recommended for your particular size of compressor — too much oil results in carbon formation and overheating.

★★★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
(Hicycle...Universal)
ROCK DRILLS

CHICAGO PNEUMATIC
TOOL CP COMPANY
General Offices: 8 East 44th Street, New York, N. Y.

★★★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

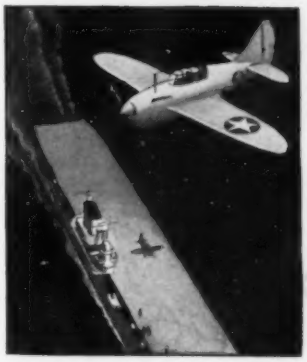
WIRE ROPE FIGHTS AT SEA

TRAPPING U-BOATS

When a Nazi U-boat sneaked into Scapa Flow and blasted Britain's big carrier *Royal Oak* to the bottom, the loss underlined the fact that to block U-boats out of a harbor, you've got to lock it up tight—not just with mines but with elaborate nets made of strand. Keeping harbors closed to undersea marauders is one of Bethlehem's war-time jobs. Our wire-rope mill has been turning out large quantities of harbor-defense strand—a high-strength strand of special construction, and with the famous bethanized electrolytic zinc coating.

TOSSING FIGHTERS INTO ACTION

An aircraft carrier, as everybody knows, houses its fighter planes and bombers on the hangar deck, which is directly beneath the flight deck. When an attack alarm comes in, those planes must get from hangar deck to flight deck and into the air in almost less time than it takes to tell about it. Special Bethlehem wire rope is used in the high-speed plane lifts of some of America's biggest carriers.



TOWING DAMAGED FREIGHTERS

Every cargo vessel in a convoy is now equipped with two husky towing hawsers, installed in such a way that they can be rushed into action at a moment's notice. If a vessel is struck and crippled by a torpedo, one of the emergency towing hawsers is attached to a sister ship and the damaged vessel is brought safely into port. Bethlehem has had a lot of peacetime experience in building strong, corrosion-resistant towing hawsers. United Nations' convoys are benefitting from that experience now.

★ ★ ★

In hundreds of jobs on sea and on land—ships' rigging, aircraft-control cord, minesweeping cable, mine-anchor cable, and naval dredge rope, to name a few—Bethlehem Wire Rope is helping to win the war. There are also pressing needs for Bethlehem Wire Rope on the home front—in war factories, mines, timber lands, construction jobs, and oil fields. We are doing our level best to keep everybody adequately supplied. The job is enormous. If you have to wait to get delivery on your rope, we hope you'll keep that in mind, and bear with us.

Bethlehem Manufactures Wire Rope for all Purposes

TROJAN
HIGH EXPLOSIVES

NITROSTARCH BASE

FOR

MINING, QUARRYING, AND CONSTRUCTION PURPOSES

1905 **1943**

We desire to take this means of expressing our appreciation to our commercial trade both domestic and foreign for their cooperation in these trying times. We deplore war and greatly prefer that the power of our organization and our products be devoted exclusively to the arts of peace. However, as in World War I, we are willingly doing our utmost for the Allied Cause.

WILL NOT PRODUCE HEADACHES
FROM HANDLING OR FROM
BREATHING THE FUMES
FROM MUCK PILES.

WILL NOT LEAK OR FREEZE
AT ANY TEMPERATURE.
USED IN THE TROPICS AND
IN ANTARCTIC EXPEDITIONS

MANUFACTURED BY

TROJAN POWDER COMPANY

ONE OF THE OLDEST MANUFACTURERS OF HIGH EXPLOSIVES IN AMERICA

PLANTS

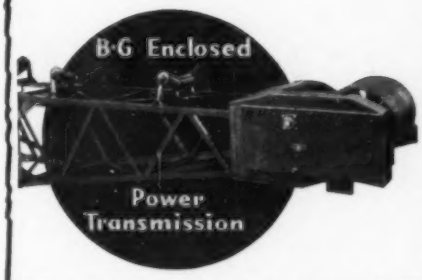
SEIPLE, PA. ROBERT, CAL.

MAGAZINES STRATEGICALLY LOCATED THROUGHOUT THE UNITED STATES

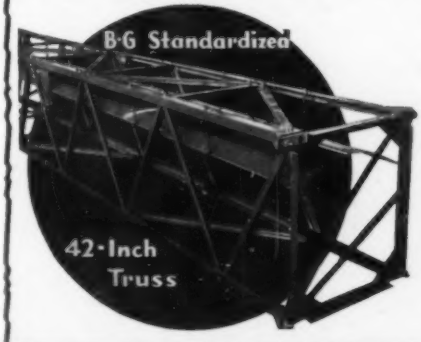
OFFICES

NEW YORK, N. Y. ALLENTOWN, PA. SAN FRANCISCO, CAL.
PORTLAND, OREGON LOS ANGLES, CAL.

Via Barber-Greenes



B-G Standardized Units include 24" and 42" deep Steel Truss, Enclosed Power Transmission, Head End Drives, Wrap Drives, Various Types of Take-Ups, A Frames, Walkways, etc. All unit parts and assemblies are accurately rated, giving the individuality of a "tailor made" conveyor plus the many additional advantages of standardization.



BELT conveyors offer by far the cheapest means of handling bulk materials. Barber-Greenes offer many additional advantages.

Having Pre-Engineered Standardized Unit Parts and Assemblies, the B-G Sales Engineer is able to make a quicker, more accurate price estimate, the Engineering Department is able to make a quicker, more practical layout.

This B-G Standardization lets us carry the parts in stock for practically any conveyor requirement — giving prompt shipment.

Erection is tremendously speeded up and simplified, and perfect alignment is assured.

B-G Standardization allows the addition of standard accessories later, and Barber-Greene Standardized Sectional Construction permits unequalled change of set-up to meet changing conditions.

B-G Carriers are recognized for their excellent design and performance records. They are available with plain, ball, or roller bearings. If you are replacing carriers or erecting your own conveyor, investigate B-G Carriers.

Solving your handling problems is our business.

Standardized Material-Handling Machines

BARBER GREENE

AURORA, ILLINOIS

38-10

DRILLING *to take out the toe!*

Drilling a snake hole with the DR30

CLEVELAND DR30 Wagon Drills, in addition to having plenty of speed and stamina, are also remarkably maneuverable. They drill readily in any position and at any angle—straight down, flat, breast high, higher than your head, or within 4″ of ground level—even straight up when necessary.

The DR30 has a recoil device to increase cutting speed. The forward leg point steadies the drill. Other important features include a handy centralizer to keep the steel from "walking" while starting a hole. Also a double-screw jack for moving the U-bar. With a feed capacity of more than 8 feet, the DR30 handles depths to 25 feet and more.

Bulletin 132, sent upon request, explains why the DR30 is the most popular wagon drill ever built.

BRANCH OFFICES

Birmingham, Ala.	Denver, Colo.	Philadelphia, Pa.
Berkeley, Calif.	Detroit, Mich.	Pittsburgh, Pa.
Boston, Mass.	El Paso, Texas	Richmond, Va.
Buffalo, N. Y.	Ironwood, Mich.	Salt Lake City, Utah
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Chicago, Ill.	Lexington, Ky.	Victor, Colo.
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Dallas, Texas	Milwaukee, Wis.	Washington, D. C.
	New York, N. Y.	

CANADIAN DISTRIBUTORS

Purves E. Ritchie & Son, Ltd., 658 Hornby Street, Vancouver, B. C.
Whitehall Machine & Tools, Ltd., Galt, Ontario

BUY U. S. WAR BONDS AND STAMPS

THE CLEVELAND ROCK DRILL COMPANY

Subsidiary of The Cleveland Pneumatic Tool Company

CABLE ADDRESS: "ROCKDRILL" • CLEVELAND, OHIO

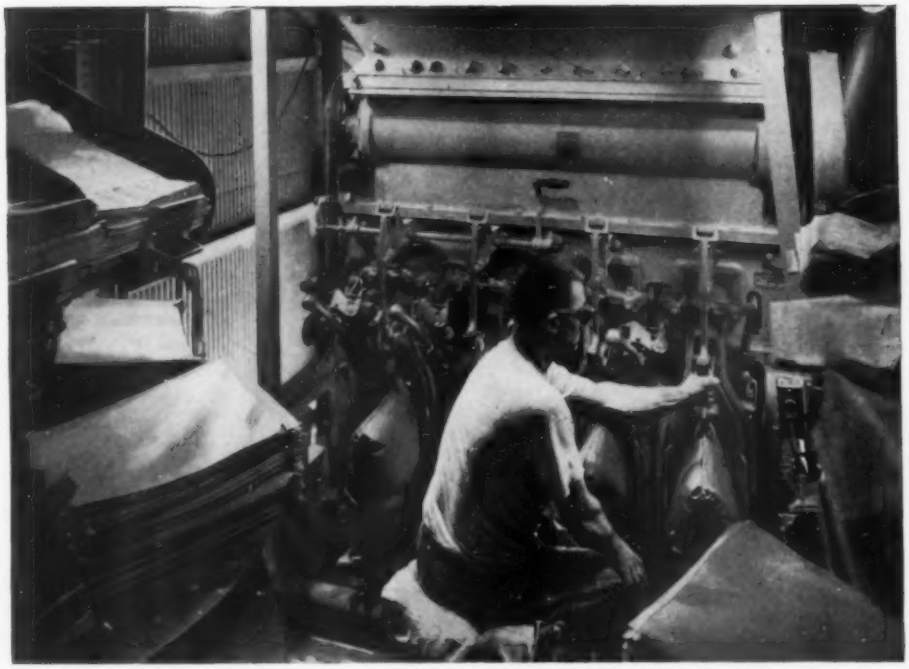
LEADERS IN DRILLING EQUIPMENT

EVERY DRAGLINE OPERATOR SHOULD HAVE THIS BULLETIN. It illustrates in detail how the DRAGLINER is (1) Scientifically designed for great strength and durability. (2) The round smooth front end cuts digging resistance. (3) The Manganese Steel combination hitch plates and bumpers to take the shock and protect the arch and drag hitches. THE DRAGLINER CANNOT BE DROPPED ON THE ARCH. (4) Trouble free lips and teeth as well as a number of features not found in any other design all of which contribute to increased yardages of hard-to-dig materials.

Designed and Sold by
DANIELS-MURTAUGH CO., Cedar Rapids, Ia.

Built by
UNIVERSAL ENGINEERING CORP.

2,068 POUNDS OF CEMENT packed per minute



by this St. Regis valve pack system

As easily as you shift gears in your automobile, one operator packs one ton of cement in one minute using St. Regis Packer and the Multiwall Valve Paper Bag. This is accomplished by the self-closing feature of the St. Regis Valve Bag, the rapid production of the packer and the elimination throughout the whole packing process of lifting filled bags.

St. Regis Multiwall Paper Bags play an important part in this operation. Through years of experience in packing rock products, St. Regis Paper Company has perfected Multiwall Paper Bags which protect the product in transit and storage and assure the maximum in packaging efficiency and economy.

St. Regis MULTIWALL PAPER BAGS

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

ST. REGIS PAPER COMPANY

TAGGART CORPORATION • THE VALVE BAG COMPANY

NEW YORK: 230 Park Avenue

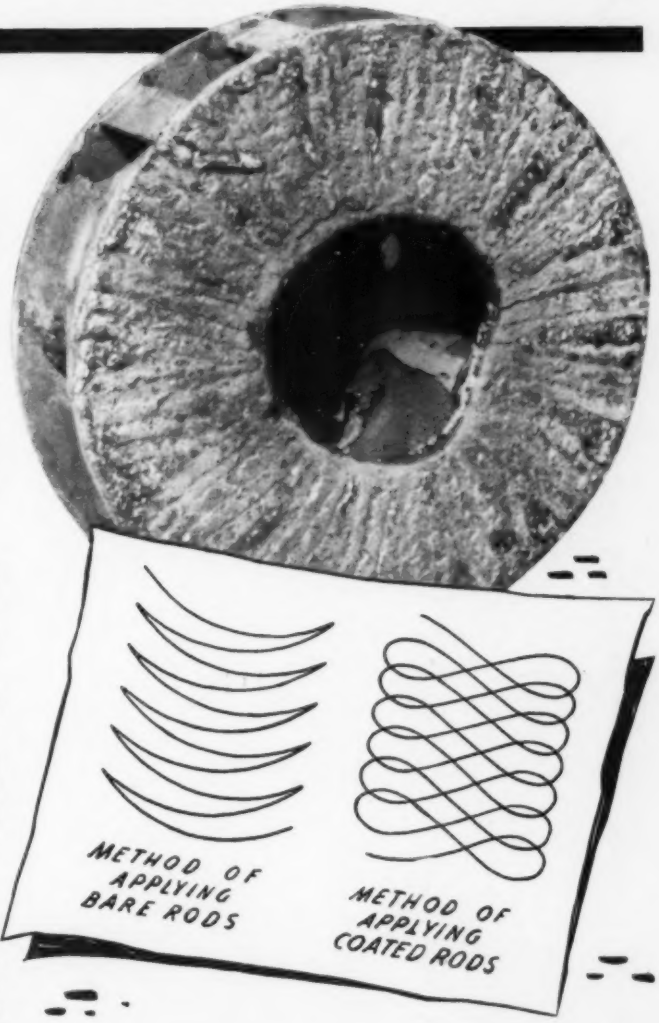
CHICAGO: 230 No. Michigan Avenue

Offices also at: Baltimore, Md. · Birmingham, Ala. · Dallas, Tex. · Denver, Colo. · Franklin, Va. · Los Angeles, Calif. · Nazareth, Pa. · New Orleans, La. · San Francisco, Calif. · Seattle, Wash. · Toledo, Ohio

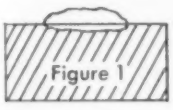
To get maximum depth in a single pass

Hard-face wearing parts

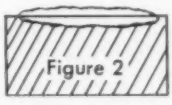
with Bare Electric Stoody Self-Hardening



HARD-FACING heavy equipment or equipment receiving severe abrasion requires a deposit of hard metal ⅜" thick for efficient wear resistance. A deposit of this depth cannot be obtained with coated rods in less than two passes, and without a chipping operation between each. ¼" diameter Bare Electric Stoody Self-Hardening, however, produces the required depth in a single pass, not only saving material, but completely eliminating the chipping operation. A typical deposit of Bare Electric Stoody Self-Hardening shown on the sand pump impeller at the right reduced maintenance costs 50 per cent at ¼th the cost of a new impeller.



Characteristics of Bare Electric Stoody Self-Hardening and coated rod deposits as illustrated readily show the advantages of the bare rod when heavy deposits are required. Figure 1 shows the bare rod, end view. Note the height of deposit above the parent metal. Figure 2 shows a typical deposit of a coated rod. Deeper penetration with a flatter crest on the bead are characteristic. Application of the bare rod should be made with a crescent movement, in contrast to weaving motion ordinarily used with coated rods.



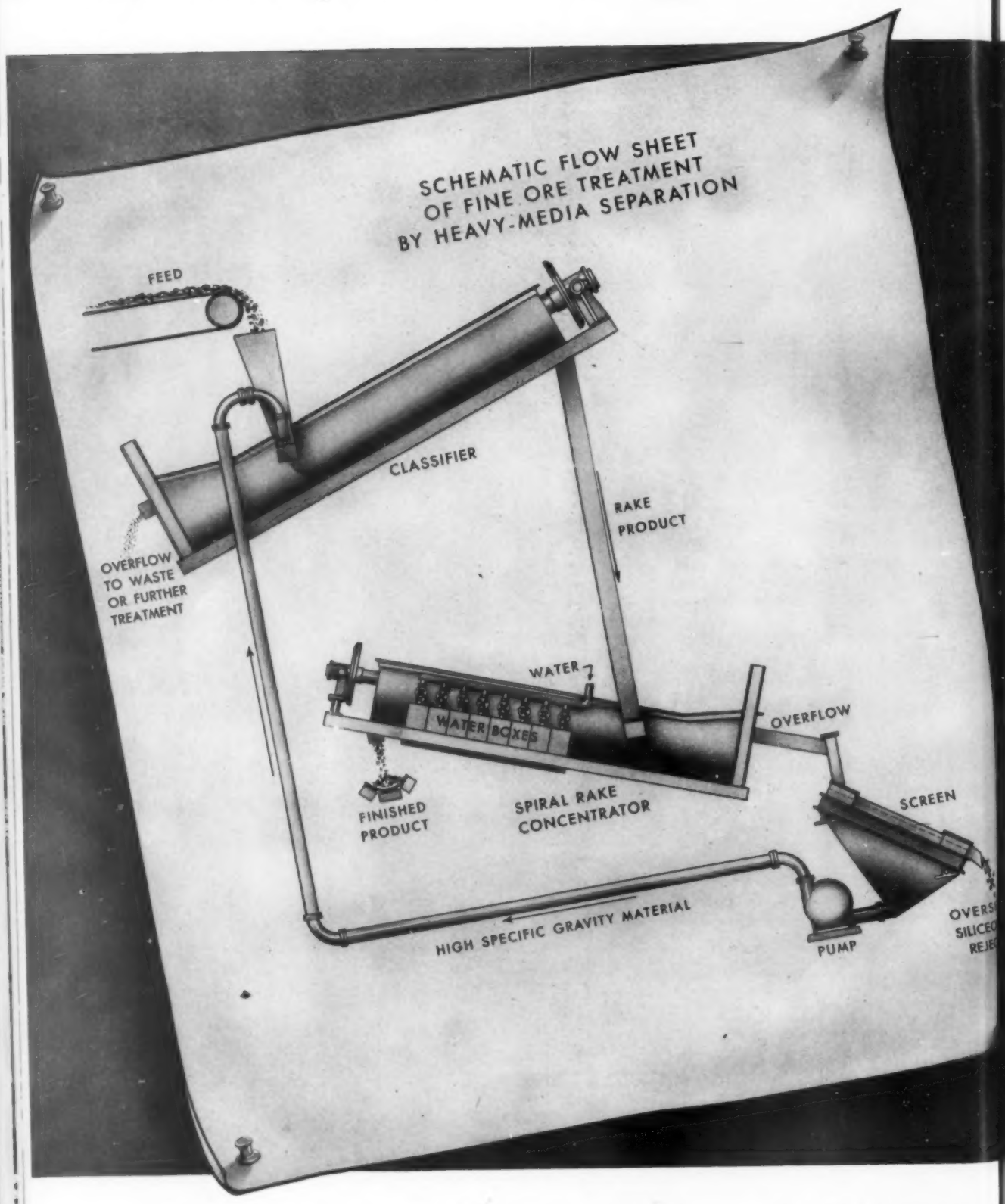
Use of Bare Electric Stoody Self-Hardening on all hard-facing jobs where maximum depth of deposit is required saves time and essential materials assuring utmost wear resistance with a minimum of application effort. ¼" x 14" Bare Electric Stoody Self-Hardening is available on a AA-5 priority at 50c per lb. F.O.B., Whittier, California. A trial order will prove the advantages of Bare Electric Stoody Self-Hardening on heavy equipment.

STOODY COMPANY, 1129 WEST SLAUSON AVENUE, WHITTIER, CALIFORNIA

STOODY HARD-FACING ALLOYS

Stop wear . . . Eliminate Repair

New Development in Fine-Ore Treatment



AMERICAN CYANAMID COMPANY

by a Heavy-Media Separation Process

Using the fine heavy constituent of the ore as a separating medium, this new development in fine-ore treatment expands the field of Heavy-Media Separation to that part of the feed that is too fine for Heavy-Media Cone Plants but too coarse without regrinding for froth flotation. The process is also directly applicable for pre-concentrating or making a finished concentrate on ores requiring crushing to ¼" to liberate values.

Thoroughly proved by commercial use in two plants on Mesabi Iron Ore (a third is under construction and a fourth is planned for the East), pilot plant test-results in the Cyanamid Ore Dressing Laboratory indicate its applicability to fluorspar, manganese, chromium and other free-milling ores. Because the fine heavy constituent of the ore forms the separating medium, it is a low-cost process requiring minimum power, labor, maintenance and plant investment.

This new development in fine-ore treatment expands still further the scope and flexibility of application of the beneficiation processes offered by Cyanamid. Whether your ore can best be treated by a Heavy-Media Separation process alone, or by a combination of Heavy-Media Separation with chemical beneficiation by froth flotation, Cyanamid can unprejudicedly recommend the flow scheme to give highest yield at lowest cost.

Cyanamid Field Engineers are available to work with you in your mill on the development of the most efficient flow scheme for your ore. The unexcelled facilities of the Cyanamid Ore Dressing Laboratory for Chemical, Physical and Microscopical research and testing, as well as batch and continuous-unit testing of metallics or non-metallics by mechanical or by chemical beneficiation processes are at the service of the entire mining industry.

Ore Dressing Notes #12 now in preparation will describe fine-ore treatment by Heavy-Media Separation and will also contain a description of the Heavy-Media Separation Pilot Plant recently installed at the Cyanamid Ore Dressing Laboratory. A copy will be sent on request. If you have not already received Ore Dressing Notes #11 "Heavy-Media Separation Processes" for treating coarse ore, we will be glad to send a copy.

30 Rockefeller Plaza, New York, N. Y.

Protected against delays in COAL DELIVERIES

One of the larger public utilities wanted to be secure against the possibility that adverse conditions—natural or otherwise—would deprive them of an adequate coal supply for their power plants.

They called in ROBINS.

On an idle site a quay was built, spur tracks were laid, two 1600 ft. belt conveyors were installed, a bridge (with integral sizing units) was erected—and a stockpile of nearly 250,000 tons was built up. Now they have no fear of running short of coal. Nor is there any danger of spontaneous combustion in the pile.

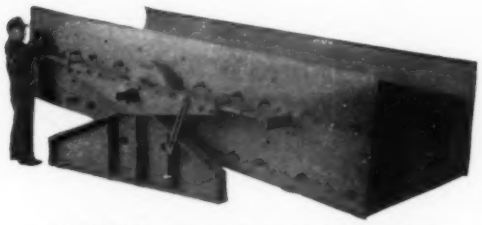
This entire project was engineered, manufactured and erected by ROBINS. Have you a bulk materials handling problem?

FOR MATERIAL AID IN MATERIALS HANDLING ..... ***It's ROBINS***

ARE YOU THINKING OF

Converting to Coal?

Discuss the matter with a ROBINS Field Engineer. The technique for storing and handling coal is different from oil. A number of shortcuts and economies are possible—a few precautions are advisable. Consultation with a ROBINS Field Engineer—from any of our ten offices—involves you in neither cost nor obligation.



ROBINS VIBRATING SCREENS

SHARP SIZING · HIGH CAPACITY
SIMPLE DESIGN · SMOOTH OPERATION

Sizes and types for every purpose · *Gyrex* for heavy duty sizing and scalping · *Vibrex* for fine sizing; has high speed, unbalanced vibrator · *Eliptex* for horizontal installations and dewatering; has elliptical throw, counter to travel of material · *Contractors'* for accurate sizing and salvaging of aggregates, cinders, coal, coke and other materials · *Hydrex* for clarifying liquids and dewatering solids. Bulletins on request.

ROBINS makes

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FINANCING POST-WAR RE-EMPLOYMENT

ACCEPTANCE OF THE IDEA that unless the Federal Government steps in with a lot of political make-work construction, there must of necessity be much post-war unemployment, was blasted by Col. Willard T. Chevalier, publisher of *Business Week*, at the recent meeting of the American Road Builders' Association. The point Col. Chevalier made was that there is no need for make-work projects; that there *is* need for investment in the kind of public works, or utilities, which can be made to pay off their cost.

The Colonel's plea for economic sanity, and W. P. Witherow's (president, Blaw-Knox Co.) robust defense of private enterprise at the same meeting, gave us some ideas that may or may not be orthodox economics. At least they are an interesting speculation.

The Government policy started with the conviction that spending creates prosperity, regardless of how the wherewithal to spend was obtained. It resulted in a record-breaking national debt—and this debt has been increased ten-fold for waging war. The so-called war prosperity (inflation of wages, prices and employment) has only served still further to convince Government "economists" that spending is prosperity.

Before the entrance of the United States into the war everything possible was done, both by example and precept, to discourage individual thrift and self-reliance. Since the war began, in order to have buyers for U. S. bonds, some educational work has been done to promote individual thrift. From the remarkable record of debts paid off, life insurance sold, growth of savings banks' deposits, United States bonds sold, etc., it is apparent that naturally thrifty Americans never were persuaded to become spendthrifts.

The Government has sold an astonishing national debt to its citizens, and of course will sell as much more as is necessary to win this war. However, what the Government is actually doing is to transfer its own credit to its citizens as individuals. The 200 or 300 billion dollar purchasing power of the Federal Treasury for war is now in the hands of millions of individual American citizens in the form of Treasury I.O.U.'s. These can be converted into currency, or its equivalent, as fast as the individual holders find other use for their savings, without cost to the Treasury except the cost of printing checks and currency.

The general belief is that individual owners of the national credit (that is the bondholders) will rush to buy cars, radios, refrigerators, etc., etc., to the tune of 30 or 40 billion dollars for a year or two or three. Such a rush could not fail to result in high prices (inflation), because there will not be enough such goods to satisfy demands, and it will take considerable time to reconvert present war plants to manufacture of peace-time goods. And, it will take a tremendous amount of new capital investment to reconvert. Where is this capital coming from? The economic planners say, let the Federal Government finance reconversion.

Mr. Witherow says, merely let the Government remove the shackles from private industry and private industry will do the rest. It could be accomplished, it seems to us, even if the Government still retained many of its regulations in respect to private industry.

Our suggestion is that the Government encourage its creditors (the millions of individual bondholders) to transfer their savings to investments in American industry, instead of rushing into a short market for consumers' goods. Since the Government, through its laws regulating the issuance of securities, is in a position to give investors all possible protection, it seems to us that this would be a sound economic move.

Then, instead of the Federal Government issuing billions of new notes and bonds it would merely divert its outstanding bonds to development of American wealth-producing industries. The Government would transfer the credit that it has sold to its citizens to industry direct, or through insurance companies and investment trusts. In short, the Government can encourage industry to use the newly acquired credit (wealth) of its citizens, and encourage those citizens, to finance post-war production *of wealth*.

Such a conversion of U. S. bonds to industry capital on a wide enough scale would prevent post-war price inflation, provide capital for conversion of war plants and for the establishment of plants in many new industries, continue to promote thrift, and give 30-odd million thrifty Americans a real stake in their country's *wealth-producing* enterprises.

The Federal Government, of course, is not getting rid of all its obligations by cashing owners' bonds. The cash, or its equivalent, will eventually pile up in banks and therefore greatly swell bank deposits or credits. This is inflation of credit or money, but credit will pile up in banks, however the citizens spend their savings; the turnover and therefore the totals will be less when spent for capital investment then when spent for consumer goods. Moreover, the Government would not have to pay interest any longer on its I.O.U.'s thus acquired by the banks, and it can control bank credits far easier than it can control credit (or buying power) in the hands of 30 million of its citizens.

Nathan C. Rockwood

NEWS ABOUT PEOPLE

National Cement Vice-President

S. G. THYRRE, vice-president of F. L. Smidth & Co., New York, N. Y., has been elected vice-president of the National Portland Cement Co. Mr. Thyrre has been closely connected with the cement industry both in England and in this country for the past 20 years. In addition to his new responsibility Mr. Thyrre will retain his present position in F. L. Smidth & Co.

Resigns

H. H. TITSWORTH, president of the Glens Falls Portland Cement Co., Glens Falls, N. Y., has resigned because of ill health and has been named chairman of the board of directors. H. E. HARDING, who has been a member of the board since 1939, was elected to succeed Mr. Titsworth as president of the firm, and will divide his time between the Glens Falls and New York offices.

Awarded Inco Medal

DR. LLOYD PIDGEON was recently presented the Inco platinum medal for distinguished service to Canada and the United Nations by the Canadian Institute of Mining and Metallurgy. Dr. Pidgeon is widely known in the United States for his development of the process for extracting magnesium from dolomite.

A Flyer Hero

STEPHEN STEPANIAN, vice-president and general manager of the Arrow Sand & Gravel Co., is watching the war news with more than casual interest these days. He has an Armenian cousin, Nelson Stepanian, who is a dive bomber hero of the Soviet Union air force. Although "Steve" has never seen his cousin, he is justifiably proud of his record. According to a newspaper report, his flyer cousin is credited with having destroyed 78 German trucks, 67 tanks, 63 anti-aircraft guns, 19 mortars, 36 railroad cars, 20 merchantmen and warships, 13 fuel tankers, 12 armored cars, seven long-range guns, five ammunition dumps and five bridges. He was wounded and forced to land behind the German lines but guerrillas helped him escape.

85 Years Young

GEORGE SMALLEY BARTLETT, father of the concrete highway and perennial "Ambassador of Goodwill," celebrated his 85th birthday recently at a luncheon in his honor at the Union League Club, Chicago, Ill. Attending were 70 of Mr. Bartlett's friends, most of whom have known him for

George Smalley Bartlett

25 to 50 years, and the entire executive committee of the American Association of State Highway Officials. Carl Franks, midwest regional manager of the Portland Cement Association, was toastmaster.

Given Service Award

GEORGE P. SCHWAAB, sales manager for the Manitowoc Portland Cement Co., Manitowoc, Wis., was recently presented with a gold watch in recognition of 25 years meritorious service with the company. The presentation was made by J. B. John, president and general manager of the Medusa Portland Cement Co., the parent organization.

New Superintendents

JOHN P. BURROWS, formerly purchasing agent, Union Potash and Chemical Co., Carlsbad, N. M., is connected with the International Minerals & Chemical Corp. as superintendent of its magnesium chloride plant.

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NORMAN C. BROOME, assistant to the late George F. Fletcher, vice-president and superintendent of the Mica Co. of Canada and New York, Massena, N. Y., who passed away recently, has been made superintendent of the Massena plant. Mr. Broome is a native of Swindon, county of Wiltshire, England, where he received his education.

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R. E. MINOGUE, assistant superintendent of the Manitowoc Portland Cement Co., Manitowoc, Wis., has been promoted to the superintendency of the Medusa Portland Cement Co., plant at Toledo, Ohio.

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ROBERT C. RIED has left the Separation Process Co. to become assistant superintendent of the Valley Forge Cement Co., Catasauqua, Penn.

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DONALD B. KEMPFER has become superintendent of mines, Sierra Talc Co., Shoshone, Calif. Previously he was employed by the Pacific Tungsten Co. in Darwin.

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FRANK C. PICKARD, formerly production engineer with the U. S. Gypsum Co., has become divisional superintendent of the Fresnillo Co., Fresnillo, Mexico.

With Gypsum Company

HAROLD HAYES, formerly editor of Concrete Products, now a section of ROCK PRODUCTS, is now identified with the News Bureau of the United States Gypsum Co., Chicago, Ill.

On Board of Trustees

EUGENE W. MAGNUS, general manager of the Eastern Magnesia Talc Co., Inc., Burlington, Vt., has been elected a member of the Norwich University board of trustees.

Canadian Dept. of Mines

VERE L. EARDLEY-WILMOT, mining engineer, has been transferred from the industrial minerals division to the economics division, Department of Mines and Resources, Ottawa, Ont.

Elected Director

ARTHUR L. FIELDS, of Fields Chevrolet Co., Portland, Ore., has been elected a member of the board of directors of the Oregon Portland Cement Co.

Re-elected President

M. O. MATTHEWS, president of the Oklahoma Portland Cement Co., Ada, Okla., has been re-elected president of the Associated Industries of Oklahoma.

Vice President of Business Club

PAUL W. STEIN, of the Kansas City Concrete Pipe Co., Kansas City, Mo., was recently installed as vice-president of the Builders Division of the South Kansas City Business Club.

N. I. C. C. President

OTTO C. FREI, general manager of the Washington-Idaho Lime Products Co., Orofino, Wash., is the new president of the North Idaho Chamber of Commerce.

Appointed Sales Manager

R. H. B. SMITH has been appointed sales manager for the southern New England Division of the Lawrence Portland Cement Co., New York, N. Y., with headquarters at 10 High St., Boston, Mass.

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WALTER E. BOWE has been appointed sales manager for the northern New England Division of the Lawrence Portland Cement Co., New York, N. Y., with headquarters at the new sales office at the mill in Thomaston, Me.

Joins U. S. Health Service

WILLIAM E. MCCORMICK, formerly director of the Industrial Hygiene Laboratory, Wilson Products, Inc., Reading, Penn., has been commissioned as an officer in the Reserve Corps of the U. S. Public Health Service. He has reported for active duty at the Division of Industrial Hygiene, National Institute of Health, Bethesda, Md.

Promoted to Vice-President

CHESTER L. BAKER, chemical director of Philadelphia Quartz, has been named vice-president of manufacturing and engineering. Mr. Baker joined the company in 1927 as chief chemist in Berkeley, Calif.; in 1935 was transferred to Philadelphia, and in 1940 was appointed chemical director. CLAIRE H. JEGLUM has been appointed assistant to the chemical director; HARRY L. BOLTON, assistant chemical manager of quality control, and ALFRED H. MCKINNEY chemical engineer.

Elected Vice-President

ROBERT T. HARRIS, vice-president of the Blaw-Knox Division, Blaw-Knox Co., Blawnox, Penn., has been elected vice-president of the Highway Industries Association, which is affiliated with the Manufacturers Division of the American Road Builders Association. E. R. GALVIN of R. G. LeTourneau, Inc., was named president; and HENRY SCHRAMM, president of Schramm, Inc., secretary-treasurer. Members of the Highway Industries Association consist of outstanding manufacturers of products used in construction of highways and represent the manufacturers in road shows and in their relationships with the American Road Builders Association. Mr. Harris stated that at present the principal activity is in planning for the post-war period and that progress in that direction is most encouraging.

Robert T. Harris

Promoted

HOWARD F. KICHLINE, chief chemist of North American Cement Corp., New York, N. Y., has been appointed assistant operating manager with headquarters at Catskill, N. Y.

Still Active

CHARLES BOETTCHER, president of the Ideal Cement Co., Denver, Colo., parent company of the Oklahoma Portland Cement Co., Ada, Okla., although more than 90 years old, is one of the company's hardest workers and is the first person in the office every morning. Mr. Boettcher is interested in many lines of business, and has had a very vital part in the industrial development of Denver and Colorado in the more than a half century he has been active. He not only heads the cement industries, including ten plants in the area between the Mississippi and the Continental Divide, but he has a controlling interest in many beet sugar mills, and owns the Denver Tramway company, which operates the street railway system of that city. Associated with him is his son, Claude K. Boettcher, who heads Boettcher & Co. and is also head of the Potash Co. of America.

Assistant Chief Engineer

EARLE W. BERRY is assistant chief engineer at the Bluebonnet Ordnance Plant, operated by the National Gypsum Co. in Texas.

W.P.B. Mica Committees

MEMBERS of the W.P.B. Industry Advisory Committee on wet ground mica are: J. Fuller Brown, Richmond Mica Corp., Biltmore, N. C.; John Davenport, Franklin Mineral Products Corp., Boston, Mass.; W. F. Deneen, Newdale Mica Co., Erwin, Tenn.; F. D. Pitts, Concord Mica Co., Newton, Mass.; J. B. Preston, Jr., English Mica Co, Spruce Pine, N. C.; David T. Vance, David T. Vance Co., Plumtree, N. C.

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MEMBERS of the W.P.B. Industry Advisory Committee on dry ground mica are: Harry Bailey, Carolina China Clay Co., Penland, N. C.; J. Fuller Brown, Asheville Mica Co., Biltmore, N. C.; W. F. Deneen, Newdale Mica Co., Erwin, Tenn.; Philip S. Hoyt, Capitan Hotel, Van Horn, Texas; M. F. Mills, Victor Mica Co., Inc., Spruce Pine, N. C.; Sigurd Olsen, U. S. Mica Manufacturing Co., E. Rutherford, N. J.; D. D. Rice, Southern Mica Co., Johnson City, Tenn.; Fred Smith, Harris Clay Co., Spruce Pine, N. C.; Joseph A. Stanko, Western Non-Metallics, Inc., Pueblo, Colo.

Awarded Bok Medal

WILLIAM LOREN BATT, vice-chairman of the War Production Board and president of SKF Industries, Inc., Philadelphia, Penn., has been awarded the Bok Medal and a $10,000 check, not only for his service to the Nation in leading industrial mobilization of the war, but as a citizen who performed the most distinguished service for Philadelphia in 1942. This award is the twenty-first since its inception by the late Edward W. Bok in 1921.

Made Manager

ALBERT F. PAWLIK of Rocky River, Ohio, a member of the Diamond Alkali Co. sales organization for many years, has been made manager of the company's Painesville, Ohio, sales office located in the Cleveland Trust Co. building. This announcement was made by George S. Cooper of Pittsburgh, executive vice-president of the company. Mr. Pawlik succeeds Byron Huffman, who resigned recently to become vice-president and director of sales of the Liberty Glass Co., Sapulpa, Okla.

Awarded Medal

WILLIAM HOWE, a member of the accounting department of the Universal Atlas Cement Co., Hudson, N. Y., has completed 25 years of service in the employ of the company, and was presented with a silver medal.

Chaplains

REV. SAMUEL BILBROUGH, office manager for the Dezendorf Marble Co., Austin, Texas, is 1st Lieutenant Chaplain in the U. S. Army, and Agustin Diaz, grandson of a former president of Mexico, is a private.

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L. A. MAYO, who has been in the concrete pipe business in Durham, N. C., is now a chaplain in the U. S. Navy.

Appointed P.C.A. Engineer

WARNER HARWOOD has been appointed regional highway engineer of the Portland Cement Association for the territory comprising the states of Wisconsin, Minnesota, North Dakota, Iowa, Nebraska, Missouri, Kansas, Arkansas and Oklahoma. Mr. Harwood received his civil engineering degree from Cornell University. He has specialized in highway and municipal work, both as a practicing engineer and as an engineer in public work with the Cook County Highway Department in Illinois.

Retires

FRED B. FRANKS, SR., internationally known cement operator, founder, vice-president and general manager of the National Portland Cement Co., Brodhead, Penn., has retired after 45 years in the industry, retaining a financial interest in the company. He remains a member of the board of directors.

In 1904 Mr. Franks built and organized the Martin's Creek Portland Cement Co., later sold to Alpha Portland Cement Co. In 1904 he formed the Bath Portland Cement Co.; in 1926 the Sandts Eddy Portland Cement Co., which he later sold to Lehigh Portland Cement Co.; in 1927 organized the Keystone Portland Cement Co., and in 1931 the National Portland Cement Co.

The retirement of HUGH LARKIN, assistant to Mr. Franks, and the complete reorganization of the National Portland Cement Co. also was announced by Eric Thume, president. J. C. HOLM, Nazareth, Penn., who has been associated with the company for the past two years, was named plant manager. The company maintains offices in Philadelphia, Penn. Mr. Holm was formerly affiliated with F. L. Smidth & Co., New York, N. Y., engineers and manufacturers of cement machinery.

Heads Canadian Press

HORACE T. HUNTER, president of MacLean Publishing Co., Ltd., Toronto, Canada, and president of Tradepress Publishing Corporation, Chicago, Ill., publishers of ROCK PRODUCTS, has been elected president of the Canadian National Newspapers and Periodicals Association. This organization represents nearly 100 Canadian magazines, business, agricultural, industrial, financial and management newspapers reaching more than 2,000,000 subscribers.

Horace T. Hunter

Safety Engineer

JAMES T. ESTES has been appointed safety engineer of The Warner Co., Philadelphia, Penn. Mr. Estes will report to Frank R. Cadman, industrial relations manager, and will spend a large part of his time at the plants and yards. He will make his headquarters at Cedar Hollow, Penn.

Returns to Office

E. G. LEWIS, who retired some time ago as eastern sales manager for Bucyrus-Erie Co., New York, N. Y., to live on his farm in Stanfordville, N. Y., has disposed of his farm and is again active with the company, with his headquarters in New York City.

Back from Brazil

R. J. JAGER, who was in Brazil for the past several years during the construction of the Lone Star Cement Co's plant, is now superintendent of their plant at Demopolis, Ala., succeeding R. B. Frost, who is now in the Sea Bees somewhere in Africa.

In the Services

ROBERT R. SCHULTZ, formerly associated with the Nordberg Manufacturing Co., Milwaukee, Wis., is a Lieutenant in the U. S. Engineer Corps.

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ROBERT W. ADAMSON is a First Lieutenant in the U.S.M.C.R., on active duty. He was sales engineer associated with Ingersoll-Rand Co.

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COL. KEMP ENGELHART it is now, for the former assistant to the president of the Fuller Co., Catasauqua, Penn., has his eagles. He is in the U. S. Army Intelligence with headquarters in Washington, D. C.

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ERNEST W. GASSAWAY, formerly yard manager and concrete technologist, Sacramento Rock and Sand Co., Sacramento, Calif., is now a Private in the Signal Corps at Drew Field, Fla.

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FREDERICK A. RICHARDSON of New York, N. Y., formerly identified with the advertising of Easton Car and Construction Co., Easton, Penn., is now in the Army.

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PAUL W. SEABAUGH, formerly a chemist for the Marquette Cement Mfg. Co., Chicago, Ill., is a Naval Aviation Cadet at Iowa City, Iowa.

Joins International

EUGENE C. ANDERSON has become associated with International Minerals & Chemical Corp., Chicago, as chief engineer of the potash division.

Appointed District Manager

ROSCOE J. WHITNEY is the New England district manager of the Colonial Mica Corp., with offices at Newport, N. H.

Resigns

J. F. KAUFMAN has resigned as chief engineer of the Ideal Cement Co. and is enjoying a vacation on his ranch near Nashville, Ark. Mr. Kaufman started his career as assistant to Paul C. Van Zandt in 1925, and had charge of the design and construction of the Fort Collins and Arkansas plants. For 12 years he was superintendent of the Arkansas plant, then in 1940 he was made chief engineer and operation manager in Denver.

Killed in Action

JOSEPH S. KILIAN, son of Andrew Kilian, kiln fireman at the McCoy plant of The Warner Co., was killed in action February 20, in Africa. He was a member of a Field Artillery Battery and has been awarded, posthumously, the Purple Heart decoration. Joseph was emloyed at the McCoy plant in 1937.

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PETER P. LUSA, formerly employed in the Berks Street machine shop of The Warner Co., Philadelphia, Penn., was Engineer's Mate 3C on the U.S.S. Juneau which was reported lost last November in the Battle of Guadalcanal. The first gold star on the company's Service Flag is for him.

W.P.B. Chief

C. L. WARWICK, secretary, American Society for Testing Materials, who has served as Chief of the Specifications Branch of the War Production Board, has been made Chief of the new Materials Branch.

Assistant General Manager

WESTON G. FROME has been appointed assistant general manager of the explosives department of the Atlas Powder Co., Wilmington, Del. He was formerly general manager of the Giant division at San Francisco, Calif.

Serving Third Term

JOHN PRINCE, president of the Stewart Sand and Material Co., Kansas City, Mo., has been re-elected president of the Council of Social Agencies for a third term.

P.C.A. Transfer

BERRY E. BREVIK, who has served for several years as field engineer for the Milwaukee office of the Portland Cement Association, operating in the Milwaukee metropolitan area, has been transferred to the Fox River Valley section of Wisconsin as field engineer to succeed John A. Ruhling, recently appointed to the post of assistant manager of the cement products bureau at the general office of the Association in Chicago. A news item about Mr. Ruhling's appointment appeared in the April issue of ROCK PRODUCTS.

Wolverine Representative

RICHARD D. STENGER has been appointed special sales representative of the Wolverine Portland Cement Co., Coldwater, Mich. His territory will cover Michigan and the Chicago area, and parts of Indiana and Ohio. Mr. Stenger was formerly salesman for the Wallfill Co. at Waukegan, Ill.

Hercules Changes

EDWARD B. MORROW, treasurer of the Hercules Powder Co., Wilmington, Del., has been elected vice-president. FRANCIS J. KENNERLEY will succeed Mr. Morrow as treasurer of the chemical company. Mr. Kennerley, who was assistant treasurer, will be succeeded by LESLIE W. MASON, present comptroller, and WILLIAM S. HARKINS will be advanced from assistant to the comptroller to comptroller. EDWARD C. HASTINGS will succeed Mr. Harkins as assistant to the comptroller.

Named Chairman

E. W. HENNE, vice-president and treasurer of the Missouri Portland Cement Co., St. Louis, Mo., presided as chairman of the special cement group meeting at the War Credit Congress held recently in St. Louis, jointly sponsored by the St. Louis Association of Credit Men and the National Association of Credit Men.

Mine Superintendent

ROBERT E. TALLY, JR., who was quarry superintendent of the California Portland Cement Co., Colton, Calif., has a position as mine superintendent with the Kaiser Co., Inc., Kelso, Calif.

In Mexico

M. A. EIBEN, president of Northern Blower Co., Cleveland, Ohio, is now in Mexico on an extended business trip studying dust problems in several industries.

With British Navy

LIEUTENANT GILBERT DAVIS, R.N.V.R., whose father, Colonel A. C. Davis, was formerly managing director of the Associated Portland Cement Manufacturers in England, is now serving with the British Admiralty Delegation in Washington, D. C. He advises that Col. Davis is busy as sheriff of London and is therefore second in command of the Government of the city under the Lord Mayor. Lieut. Davis visited the United States last in 1939 when he was works supervisor of the Associated Portland Cement Manufacturers.

Returns from Abroad

E. LEE HEIDENREICH, JR., has returned to the United States after many months of Government service in Puerto Rico where he was engaged in constructing an enormous breakwater and operation of a quarry. He is now consulting engineer for Pratt, Lassiter and Watkins, management engineers for Southern Aggregates Corp., South Carolina Granite Co., Bryan-Monroe Co., and Seminole Rock and Sand Co. He is also consulting engineer for The Palmetto Quarries Co.

Ideal Changes

CRIS DOBBINS, formerly sales manager of The Colorado Portland Cement Co., Denver, Colo., subsidiary of the Ideal Cement Co., has been appointed assistant to the president and assistant general manager. THOS. B. DOUGLAS, formerly superintendent of the Gulf Portland Cement Co., Houston, Texas, also a subsidiary of the Ideal Cement Co., was promoted to general superintendent. GEORGE WILEY was named acting chief engineer of the Ideal Cement Co. to succeed J. F. Kaufman who has resigned.

Marquette Promotions

D. S. COLBURN is now vice-president and assistant treasurer of the Marquette Cement Mfg. Co., Chicago, Ill., according to an announcement of promotions of executive personnel which became effective May 1. Other changes are as follows: V. J. HANLEY, secretary and treasurer; F. L. JAEGER, vice-president; L. W. SAXBY, assistant to the president and assistant treasurer; S. L. CRIBARI, assistant to the president; H. W. GRAUPNER, general sales manager; J. L. QUARLES, Southern sales manager; G. R. OSTRANDER, credit manager.

Plant Manager

HERBERT H. LAUER, who supervised construction of and wrote an article on the first cement plant built by the United States Government in Puerto Rico (ROCK PRODUCTS, June, 1938, p. 34), is now plant manager of the Glens Falls Portland Cement Co., Glens Falls, N. Y.

Chute Vibrator

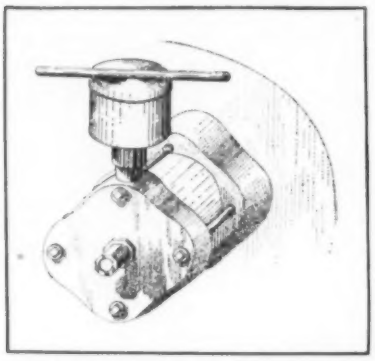
WORRALL CONCRETE PRODUCTS CO. plant near Louisville, Ky., has a full and complete machine shop, an unusually good shop as compared to most plants of this kind. Finding that the use of vibrators on their block manufacturing equipment did a good job, they devised a simple vibrator for one of the chutes that formerly tended to clog. The vibrator is simply a short shaft with an off-center pulley with the assembly driven by a small motor through a "V" belt. The device is mounted outside in the weather but protected by a small sheet-iron box. The vibrating mechanism is mounted on top of the chute, as shown in the illustration, with the motor below. Control is from the main floor.

Off-center type mechanical vibrator mounted within box keeps chute from clogging

Turning Bar on Grease Cup

MARQUETTE CEMENT MANUFACTURING CO., Cape Girardeau, Mo., plant, devised an improvement of grease cups which other companies may find useful.

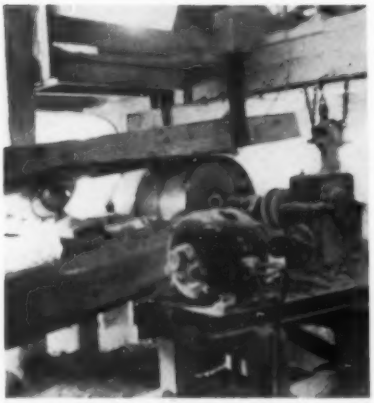
As shown in the illustration, a short bar was welded to the top of the grease cup which makes it easier to turn in cold weather and eliminates the possibility of the hand slipping. This welding kink was recently described in *Accident Prevention Magazine*.



Short bar welded to top of grease cup prevents slipping of the hand

Removing Tramp Iron

AT THE CARBON LIMESTONE COMPANY'S flux stone crushing plant is a primary gyratory crusher followed by a secondary gyratory. The secondary crusher took such a beating from tramp iron that it became unfit for further use. The operators then installed a new gyratory crusher but this time they installed it so that the crusher was fed by a short belt conveyor and the head pulley of this conveyor was a magnetic pulley driven through a gear reduction unit and a 5-hp. electric motor. With this installation there is little danger of having to replace the crusher due to wear from tramp iron.



Magnetic pulley, driven through a gear reduction unit and 5 h.p. electric motor, on short conveyor feeding gyratory crusher, removes tramp iron

Compressor Booster

THE ILLUSTRATION shows how one company helps to stifle that ever present cry of the driller for more air. At this operation there are two stationary type compressors each driven by a 75-hp. G.E. motor. During normal operations of the quarry, these two units will deliver sufficient air for their needs, but inasmuch as this quarry is very busy on defense work more air was needed so a third portable compressor was cut into the 4-in. air line serving the quarry. It is located about half way between the stationary plant and the quarry, a total distance of around 1000 ft.

Portable compressor cut into air line to supplement two stationary compressors

Air Receiver Installations

SHOWN herewith are two air receivers that are open to criticism because they do not allow for a free circulation of air through the receivers. It is our humble opinion, based on personal examinations of air receiver explosions, that such explosions come from explosive vapors. Obviously, if the vapors are removed

No. 1 air receiver for compressor is incorrectly installed as it has only one pipe into it and there is no drainage valve

No. 2 air receiver has inlet at the end and the outlet so close that a "dead" pocket is formed in the receiver

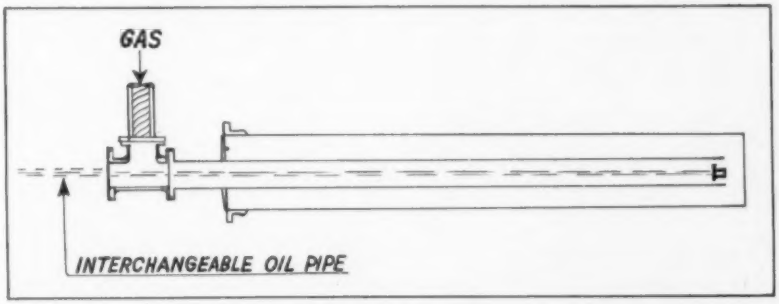
as fast as formed, there is less apt to be a disaster and the simplest and easiest way to remove said vapors is to have the receivers *air swept*. No. 1 receiver has only one pipe into it. This pipe acts as the inlet and outlet as well. There is no oil drainage valve so that the set-up is just a pocket in the line that can catch and hold explosive vapors.

No. 2 installation has the inlet at the end and the outlet so close by that most of the receiver acts as a dead pocket. However, it does have a valve for draining the oil from the receiver and a safety valve as well. This latter valve is a gesture only, because air receivers do not explode from pressure—they rip and when vapors explode in a receiver the increase in pressure is so fast and great that a safety valve is almost useless —again in our humble opinion.

Kiln Burner Pipe for Both Gas and Oil

THE PERMANENTE CORPORATION, Permanente, Calif., has designed a burner pipe for its cement kilns which is adaptable for both gas and oil fuel burning. Details of this burner pipe, which was designed by A. J. Anderson, superintendent of The Permanente Corporation, in collaboration with engineers of F. L. Smidth & Co., are shown in the illustration. This design is particularly valuable at this time when cement companies having both gas and fuel oil available for conversion from one type of fuel to the other may have to make the changeover at the behest of the government authorities at very short notice.

When the gas is shut off, the blind flange at the left end of the cast T fitting is changed, and the oil pipe is inserted through the larger gas pipe. No other support is needed. It is a very simple and practical arrangement, and the changeover is only a matter of a few minutes.



Cross section showing details of kiln burner pipe which can be changed over from gas to oil in a few minutes

Auxiliary Hopper for Dry Batching

ARROW SAND AND GRAVEL CO., Columbus, Ohio, had a problem on its hands when it built its newest ready mixed concrete plant. The regular chute for the mixer trucks could not be used when loading out dry batches to dump trucks because it was too high above the ground and there was considerable spillage.

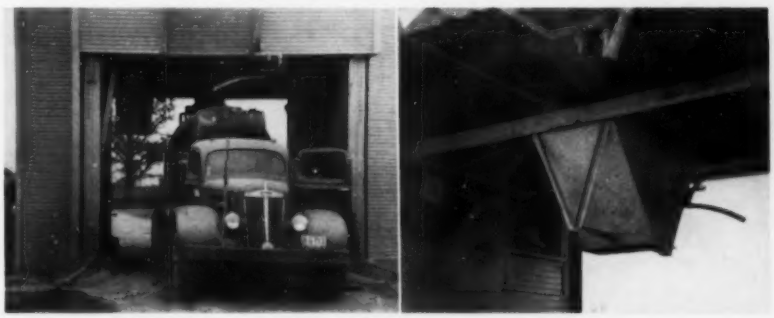
To get away from this trouble, the auxiliary hopper shown in the illustrations was designed. The hopper is equipped with small wheels to permit movement over angle iron rails so that it may be pushed out of the way when mixer trucks are to be loaded. Counterweights at the side make it an easy job to move the auxiliary hopper.

Colloidal Fuel for Industrial Use

SHORTAGES of oil in certain areas of the United States have stimulated research studies into the use of colloidal coal-oil fuel for industrial plants. The Bureau of Mines and the Atlantic Refining Co. are now making a test of the fuel at the Point Breeze, Penn., refinery.

Fire Hazard

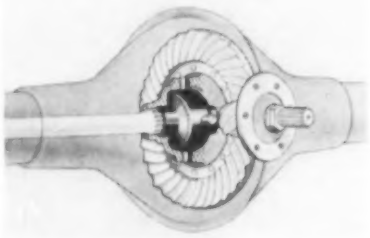
EVER PRESENT HAZARDS of fire in rubber belt may well be emphasized here. Small stoves which always seem to appear in conveyor galleries must be kept in the clear and any wood in the vicinity protected from them. The belt should be protected from sparks and hot metal whenever a burning torch is being used.



Left: Auxiliary hopper for loading out dry batches to dump trucks pulled to one side to make room for mixer truck. Right: Hopper moved into position below stationary plant hopper

Automatic-Locking Differential

THORNTON TANDEM CO., Detroit, Mich., has announced that its automatic-locking differential has been



Automatic-locking differential which eliminates wheel spin and gives positive traction

adopted as standard equipment in the 2½-ton, six-wheel drive Navy truck. This unit, known as the Marine Six by Six, is designed to give tremendous tractive ability under difficult conditions of terrain. It is said to eliminate wheel spin and give positive traction in mud, sand, snow or ice. When one of the driving wheels is on ice, snow or mud where it is unable to exert tractive effort, it does not spin; it locks and the drive is transmitted to the opposite wheel, permitting the vehicle to come out of the difficult situation under its own power.

Portable Crushing Plant of Large Capacity

IOWA MANUFATURING CO., Cedar Rapids, Iowa, has brought out a portable crushing plant with a capacity of 200 tons of aggregate per hour. It comprises five units; primary crushing plant, secondary crushing plant, sizing screen and bin, control panel, and power unit. It can be set up and put into operation or knocked down ready to travel in three to four hours, it is claimed, and the entire set up can be transported by truck at 30 or 40 miles an hour.

Material is handled in a continuous flow from quarried rock to delivery trucks. From the steel flight apron of a heavy-duty rock feeder, rock is carried into the No. 2540 primary jaw crusher, which will receive any rock that can pass through a 2-cu. yd. shovel dipper. Clutch control provides steady flow of rock into crusher and eliminates possibility of crusher choke-off.

From the primary crusher, material is conveyed to a 4- x 12-ft. Cedarapids double-deck horizontal vibrating screen. Largest oversize is fed to the secondary No. 1036 roller-bearing jaw crusher, and the next oversize to the No. 4024 roller-bearing roller crusher. Tailings of the secondary crushers are returned to the screen for grading.

From the secondary plant, material moves to the bin unit, where a second 4- x 12-ft. screen does final grading. A 40-cu. yd. capacity, two-compartment bin temporarily stores and delivers the material to trucks.

The plant is designed so that it can be driven either by electricity, by a combination of diesel and electric power, or by diesel power alone. In order to insure a smooth flow of aggregate through the plant, and to eliminate breakdowns, primary and secondary crusher plants, vibrating screens, and conveyors are independently driven. Entire plant is operated from a central control panel.

Designed for swift transportation, assembly and knock-down, the primary and secondary crushing plants are mounted on steel goose-neck trailers equipped with fifth wheel and pneumatic tires. Conveyors, which can be dismantled quickly, are carried with the secondary crushing unit. Bin legs are equipped with winches which lower the sizing screen into the bin, and the bin onto the truck.

Rubber Conservation

UNITED STATES RUBBER CO., Rockefeller Center, New York, N. Y., is now distributing a 48-page illustrated book on conservation of rubber products in industry. Suggestions for care and minimum wear of rubber products include: hose of all types; transmission, conveyor and elevator belts; mechanical packings; electrical tapes, wires and cables; molded and extruded rubber goods; rubber lined equipment; rubber mountings, mats and matting; printing materials; and rubber bonded grinding wheels.

Wire Reinforced V-Belt

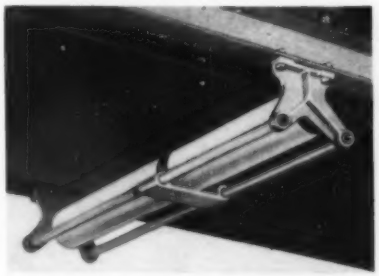
THE B. F. GOODRICH CO., Akron, Ohio, has announced that it is now producing wire reinforced V-belts. Two types are being built, a cable cord construction and a grommet construction which incorporates a wire cord placed in the center of a cotton or rayon grommet. Designed for the most rigorous services, advantages claimed for the wire reinforced V-belt type are greater horsepower capacity, increased tensile strength and low stretch.

Crushing and screening with a capacity of 200 tons per hour. Winches raise bin and screen into place when setting up

Self-Aligning Return Rollers

STEPHENS-ADAMSON MANUFACTURING Co., Aurora, Ill., has designed automatic self-aligning return rollers which it is said keep conveyor belts centered without damage to sides of belting and without the use of side guide rollers.

The roller, which turns on Seal-Master ball bearings, is pivoted at the center on an inclined axis. Thus, if the conveyor belt runs to one side, the greater weight and drag on that side of the pivot causes that end of the roller to tilt downward and forward. The rotation of the roller is then at an angle to the travel of the belt.



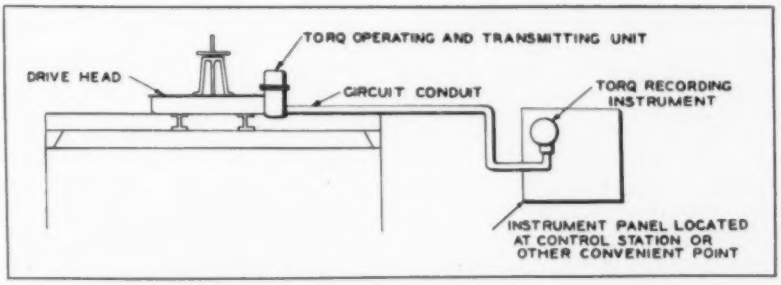
Return rollers which are self-aligning and keep conveyor belts centered

This angularity gently guides the belt back to center. As the belt returns to center, it balances and the guide roller automatically pivots back to neutral position. The first of these self-aligning return rollers should be located near the tail pulley. Additional rollers are usually spaced at 100-ft. intervals.

Recording Thickener Operation

THE DORR CO., New York, N. Y., has developed the Dorr Torq Recorder to provide an accurate continuous record of thickener operation. Designed for use on Dorr "A" thickeners equipped with a standard overload alarm, it is said to be particularly applicable where appreciable fluctuations in the drive unit load are caused by variations in solids accumulation in the thickener. The recorder can be installed on Type "A" thickeners now in use as well as on new units.

This recording consists of two electrically connected control parts, the transmitting unit and the recording unit. The transmitting unit is built into the standard overload alarm on the drive head, while the recording unit can be located at the control station or any convenient point offering easy access to the operator.


TORQ OPERATING AND TRANSMITTING UNIT
DRIVE HEAD
CIRCUIT CONDUIT
TORQ RECORDING INSTRUMENT
INSTRUMENT PANEL LOCATED AT CONTROL STATION OR OTHER CONVENIENT POINT

Installation layout of the Torq recording instrument on a thickener

As the load develops in the thickener, the impulse is carried directly to the transmitting unit from the overload alarm mechanism. The transmitting unit in turn carries the impulse to the recording unit, where it is transcribed upon a calibrated 24-hour chart, 12 in. in diameter. All variations are continuously recorded in this manner, providing a complete record of thickener operation for each 24-hour period.

Lamp to Relieve Eye Strain

SAVE ELECTRIC CORPORATION, Toledo, Ohio, has developed several types of what has been termed a Verd-A-Ray electric lamp for factory, office, and residential lighting. This lamp has a dispersive inner surface with a coating of vitreous glass enamel which contains reflective green pigment with an index of refraction materially different from that of plain glass. It is claimed that this type of lamp allows a total emission of light equalling from 85 to 95 percent of that emitted from an otherwise similar unpigmented bulb and modifying the light from the filament to emit a light having a color similar to holding a 5560 A. U. filter in front of a "standard" for ordinary light called illuminant A, expressed as having a chromaticity of X= 438 to 456, Y= 408 to 422, in accordance with 1931, I.C.I.S.O. and coordinate system.

End-Dump Hopper

ROSE MANUFACTURING Co., Detroit, Mich., has developed Model 4004 automatic end dump hopper on casters. H. L. Pitcher Co. is sales agent for the product.

When the latch is released and the load is dumped, the bucket is so balanced that it automatically returns and latches in position when reloaded. It rides empty in the balanced position. Mounted on heavy duty all-steel casters, it is said to be particularly adaptable for the handling of sand, gravel, stone and coal. It is built of structural steel and heavy plate, and is designed to fit any kind of lift truck, but may be built to specifications as to capacity and yardage content.

Showing end-dump hopper in various positions

Big Year Expected for Mineral Wool

OUTPUT of mineral wool in 1943 will exceed any previous year, according to Wharton Clay, secretary of the National Mineral Wool Association. He predicted that enough mineral wool will be produced to insulate 600,000 houses, at an average of one ton per house, with potential annual savings of 200,000,000 gal. of fuel oil and 650,000 tons of coal. Due to the difficulties of obtaining machines to blow the mineral wool between rafters and walls, the industry is urging home owners to order their insulation work done as early as possible before the Fall rush. Difficulties of the industry in meeting demands are accentuated by the tremendous call for insulation in vital defense plants. One plant alone, insulated in walls and ceiling, took enough mineral wool to insulate about 4800 private homes. In addition, tanks, high-altitude planes and ships are insulated.

WPB Asking for Road Construction Estimates

ESTIMATES on controlled materials necessary to carry on road construction projects between October 1, 1943, and March 31, 1945, have been required by the W.P.B. of all political subdivisions, state, county, township and municipal. All road construction projects by any political subdivision, not undertaken prior to last March 15, involving more than $1000 and not requiring purchase of critical materials, must have W.P.B. authority before construction is begun. Maintenance projects are not included in this latest W.P.B. ruling, and maintenance materials still may be obtained under a controlled materials plan regulation. No highway construction may be started without authority to begin actual construction regardless of whether priority assistance is required for the use of critical materials. Projects involving an estimated cost of less than $100,000 will be referred, with proper recommendation by the highway department, for processing by the regional office of the W.P.B. Applications involving $100,000 or more will be forwarded to Washington.

Warner Leases Lime Concern

THE WARNER CO., Philadelphia, Penn., is leasing all operating properties of the American Lime and Stone Co., its subsidiary, and future operations of the American plants at Bellefonte and Union Furnance, Penn., will be conducted in the name of The Warner Co., Bellefonte division. John Curtin, Jr., has been named a vice-president of The Warner Co., and will remain in general authority of the division. The move constitutes merely a change in form and not in actual management.

Chicago Street Improvements

CHICAGO'S city council has recommended that $1,568,455 in street improvements and bridge replacement and construction be carried out in 1943 from its allocation of state motor fuel tax funds.

Asbestos-Cement Siding For Barracks

IN THE ILLUSTRATION is shown a barracks building which was recently completed in one day at an army camp in Texas. The two-story structure is 30- x 80-ft., with accommodations for 63 men. Work was started at 7:30 a.m. and completed in less than 12 working hours as a test. The building was finished completely with hot and cold running water and electric lights in just 11 hours and 45 minutes. An interesting feature of the construction is the use of asbestos-cement siding.

Open New Pit

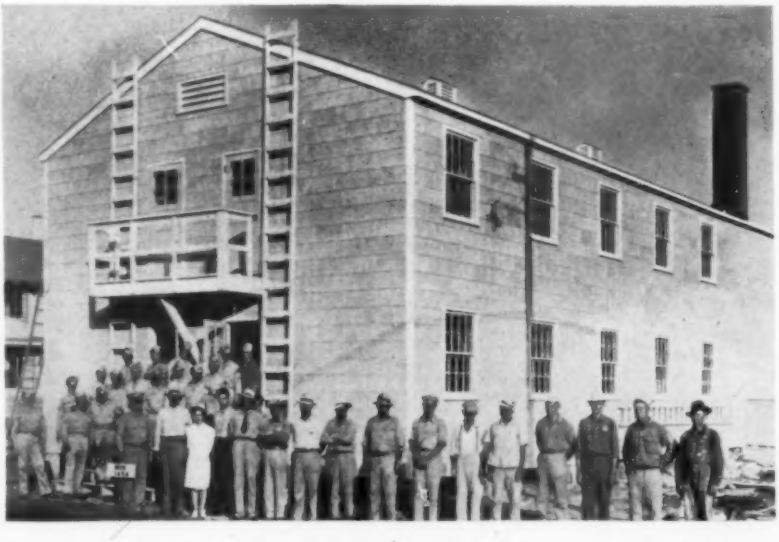
THE SCOTTSBLUFF SAND CO., has opened a new pit at West Overland, a mile from Scottsbluff, Nebr. George Lillie, president of the Platte Valley Cement and Tile Co., and Wallace Lillie, secretary-treasurer, have formed a partnership for the operation of the new industry. The sand company is furnishing materials for the contractors who are widening the airport runways of an army air base as well as supplying aggregates to the concrete products plant.

Big Sand Order

THE BARNES SAND AND GRAVEL CO., Piketon, Ohio, has received an order for 50,000 tons of sand from the Dravo Corporation, Pittsburgh, Penn., for sand to be delivered to Hinton, W. Va. The sand will be used in the construction of Blue Stone Dam crossing New River near Hinton. Deliveries of 500 tons a day are required.

Flux Stone Quarry Opens

THE MONARCH QUARRY, Salida, Colo., which was recently closed for about a month for repairs, has been reopened. This quarry has been active shipping flux stone to the smelters at Pueblo, Colo., using four train crews to bring the heavy trains to Salida by narrow gage railroad. The narrow gage cars are then emptied into the standard gage cars at the



Army barracks for Kansas cantonment was completed in less than 12 working hours. Cement-asbestos siding was used

"barrel" transfer. One shift a day will be used at the quarry for several weeks when a double shift will be put into operation.

Bids Asked on State Highway Jobs

CONSIDERABLE highway construction is underway, notably in Pennsylvania, Ohio, Illinois and Michigan on emergency highway rebuilding and construction which has been classified as essential in the war effort. Pennsylvania Highway Department has asked for bids on an access road from the City line at Bow Creek to Island Avenue at the Philadelphia Airport. This project, a section of the Philadelphia-Chester Industrial Highway, will join work already under construction by City-State agreement. The purpose of the project is to provide adequate traffic facilities to war industries in both Philadelphia and Delaware counties. The improvement is to be graded for a width of 108 ft., and four 12-ft. lanes, with a central divisor strip, will be constructed.

In Illinois, Route 66 will be rebuilt and widened for a considerable distance as a war emergency measure as this highway carries a tremendous traffic, largely military and war industry products.

Promote San Diego Cement Plant

LOCAL REPORTS from San Diego, Calif., state that Eastern interests are investigating the possibility of establishing a cement plant near San Diego, Calif., to serve overseas markets after the war. Charles H. Reed, engineer of the California Bureau of Mines, is said to have made an investigation of minerals in the county suitable for the manufacture of cement.

Agstone and Crushed Stone Bids

HANCOCK COUNTY, Ill., A.A.A. conservation committee reports a heavy movement of agricultural limestone from northern Illinois and eastern Iowa quarries. Costs per ton range from $2 to $2.55 per ton, depending on the rail destination point. Contracts for 1943 call for 54,000 tons available for this county. Rock phosphate also is being purchased at a cost of $13.50 per ton at the car. It is packed in four-wall paper bags containing 100 lb.

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WASHINGTON COUNTY, Oklahoma A.A.A. authorities are expecting a heavy movement of agricultural limestone to farms this year. N. H. Carter, county administrator, Bartlesville, Okla., advises that liming material probably will be laid down on the farm for $2 a ton.

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J. & L. SNOUFFER, INC., Dublin, Ohio, has been awarded a contract by Plain township trustees to furnish crushed stone for 90c a ton plus 80c for delivery. The haulage charge is 15c in excess of the price paid last year.

Take Over Gravel Concern

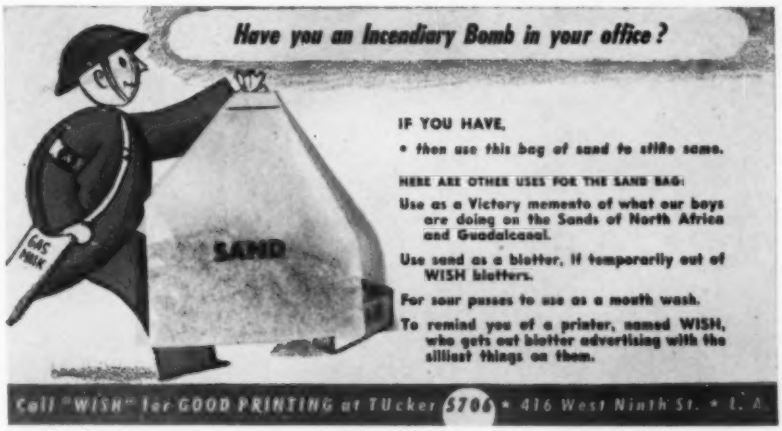
DUCK ISLAND SAND AND GRAVEL CO., has been purchased by Oscar and Lelie M. Linn from the late C. L. Whitnah estate. The McGrath Sand and Gravel Co., after exhaustive tests, opened the gravel bank as a commercial pit in 1934 on the south tip of the "island" to furnish material used in constructing Route 100 between Banner and Havana, Ill. McGrath discontinued operation in 1938.

Refuse Quarry Permit

BLUE DIAMOND CORPORATION, Los Angeles, Calif., has been denied a permit to operate a quarry and crushing plant in the Duarte area by the County Regional Planning Commission.

Sand by Teaspoonful

THE ACCOMPANYING ILLUSTRATION is a clever piece of advertising on a blotter distributed by an enterprising printer. It is a standard size blotter printed in red, blue, and black on yellow stock with a small cellophane envelope of real sand stapled to the blotter. Perhaps this does not represent much of a market for sand, but it does show that the public is more "sand" conscious than it ever has been before. It is surprising how few people, not directly associated with the industry, know anything about the myriad uses which are made of sand.


Have you an Incendiary Bomb in your office?
IF YOU HAVE,
• then use this bag of sand to stifle same.
HERE ARE OTHER USES FOR THE SAND BAG:
Use as a Victory memento of what our boys are doing on the Sands of North Africa and Guadalcanal.
Use sand as a blotter, if temporarily out of WISH blotters.
For sour passes to use as a mouth wash.
To remind you of a printer, named WISH, who gets out blotter advertising with the silliest things on them.
SAND
Call "WISH" for GOOD PRINTING at TUcker 5706 • 416 West Ninth St. • L. A.

Cellophane envelope stapled to advertising blotter contains about a teaspoon of sand. Not much of a market but it does advertise sand

Fire Damage

SILICA PRODUCTS CO., Batesville, Ark., has reported that a fire destroyed its plant at Guion, Ark. It is expected that the plant will be rebuilt as soon as equipment can be assembled. Mrs. M. A. Dunkin is president.

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ARNOLD STONE CO., Greensboro, N. C., reports that its concrete burial vault plant was recently damaged by fire.

Exempts Bessemer

BESSEMER SECURITIES CO., controlling the Bessemer Limestone & Cement Co., has been exempted from the Federal investment company Act by the Securities and Exchange Commission which ruled that the Bessemer Securities Co., is primarily engaged in a business other than that of an investment company.

Add Crusher

FRANK TRAGER, Braymer, Mo., has shipped a third crusher to Olathe, Kans., which will increase production at the quarry from 80 to 100 tons an hour. Mr. Trager has a large contract to fill near this city.

Buy Ganister Quarry

RAY B. STURBAUM has purchased the ganister quarry on Canal street in Canon City, Colo. Most of the product goes to the Colorado Oil and Iron Co., in Pueblo.

CRUSHING

More Fines—Fewer Screen Changes

New Enterprise Stone & Lime Co., Roaring Spring, Penn., plant improvements also reduce quarry haulage by rearranging crushers

By BROR NORDBERG

A SMALL CAPACITY LIMESTONE CRUSHING PLANT of unusual flexibility was built in 1941 by the New Enterprise Stone and Lime Co., New Enterprise, Penn., at Roaring Spring, Penn. It was built into the company's existing plant, as a nucleus, to raise the capacity from 20 to 60 tons per hour, and was designed to increase the production of more fine stone products and a greater number of sizes, with a minimum of screen changes.

As the plant is located on the edge of the quarry floor, at a higher level than the surrounding country, the height to which stone must be elevated is reduced and trucks may be loaded out on a lower level. In the old plant the primary crusher was on the rim of the quarry floor adjoining the screening plant, and trucks hauled stone from the quarry face directly to it.

Rearrange Crushers to Reduce Quarry Haulage

When the plant was redesigned, a secondary crusher was placed where the primary crusher was formerly located. A 36- x 24-in. primary jaw crusher was installed out in the center of the quarry to reduce the haul to a maximum of 150 ft. wherever the face is being worked. The quarry is almost circular. End-dump trucks dump into a hopper and a 36-in. apron feeder feeds stone into the primary breaker. The feeder is stopped and started by a push button located at the receiving hopper. Its speed has been increased from 6 f.p.m. to 8 f.p.m., which is faster than the crusher can take the stone. It is very convenient to regulate the flow of stone into the crusher and to dislodge oversize pieces from the reinforced concrete slab built around the hopper A 100-hp. motor drives the crusher through V-belt.

A 30-in. belt conveyor carries the stone to a revolving scalping screen located over a surge bin which has a little elevation over a 10-B Telsmith gyratory crusher. The screen has a 4-ft. barrel diameter with a 6-ft. jacket and, besides serving as a scalping screen, does a certain amount of sizing. In cleaning up the quarry, or by selective loading, trucks can dump directly into the secondary crusher.

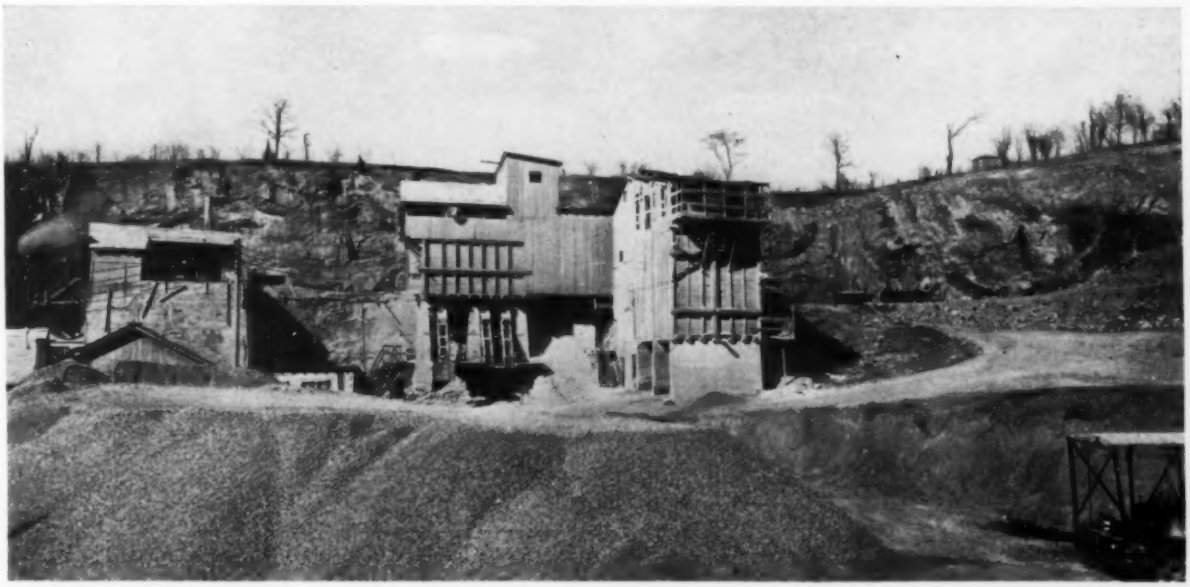
Screening to Produce a Large Variety of Sizes

Surge bin capacity is about 40 tons, in three separate compartments, with stone over 3½-in. size flowing directly into the crusher as it comes off the screen. One bin compartment contains 1- to 3½-in. stone (No. 4), which can be withdrawn and put through the crusher, when producing small sizes.

A division into 1-in. top size and ½-in. minus stone is usually made for storage in the other two bin compartments.

Either of the three sizes in the bin can be loaded out directly into trucks, or be withdrawn onto a 24-in. belt conveyor for further reduction and screening into other sizes. There is the advantage of ridding the plant of much dust when the minus ½-in. stone is withdrawn from the bin into trucks for delivery. Some of it is sold as screenings for use on roads

Left: Reduction crusher, showing feed chute, and the bucket elevator to the finish screens. Right: Vibrating scalping screen. Belt conveyor in the background takes stone from surge bin to the screen



General view of crushing plant with the quarry in the background. Note level of quarry floor with relation to plant site

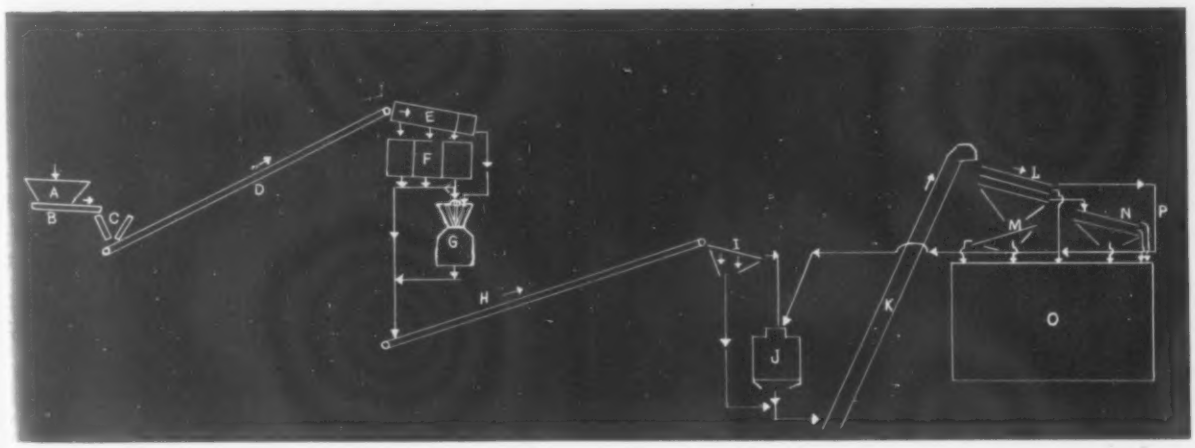
of secondary classification. Material withdrawn from the surge bin on the belt conveyor, preparatory to further processing, is first put over a 4- x 10-ft. vibrating screen. This screen is being used as a single-deck scalper to divert stone greater than the top size of concrete aggregate into a 36-in. Telsmith Gyrasphere crusher below. Pennsylvania specifies two sizes of coarse aggregate, 3A from 1- to 2½-in. and 2B from No. 4 to 1-in., which are produced from the 3½-in. minus stone stored in the aforementioned surge bin.

Screen cloth on the scalper is seldom changed, unless the plant is producing mainly minus ½-in. stone. Throughs from the reduction crusher join the by-passed materials and are elevated by bucket elevator to the finishing screens. Sizing is done over a 4- x 8-ft. triple-deck vibrating screen, which has below it a 2- x 4½-ft. single-deck screen, and a 3- x 8-ft. double-deck vibrating screen. Minus ⅛-in. stone through the third deck of the first screen is split at 20-mesh to produce a ⅛-in. to 2-mesh aggregate for concrete block manufacture.

Oversize from the top screen drops onto a belt conveyor for re-passage to the reduction crusher. A sized product, between the first and second screen decks, drops into a bin; that between ⅛- and ¾-in. retained on the lower deck is passed over the 3- x 8-ft. screen and minus ⅛-in. is re-sized over the single-deck screen. Finer gradings come off the 3- x 8-ft. screen into bins. Storage capacity totals 100 tons in six bins, and all the products are shipped by truck.

The quarry is worked on 20- and 24-ft. benches, using an Ingersoll-Rand sinker drill with 1-in. steel, which is served by an I-R portable

Stone is trucked to hopper (A) and fed out by a 36-in. Telsmith feeder (B) into a 24- x 36-in. Farrel jaw crusher (C). Thirty-inch belt conveyor (D) carries stone to revolving screen (E). Oversize goes direct into Telsmith 10-B gyratory crusher (G) and three sizes into surge bin (F). Crusher product any any others carried by a 24-in. belt conveyor (H) to a 4- x 10-ft. Telsmith Pulsator scalping screen (I). Oversize from this screen is crushed through a 36-in. Telsmith Gyrasphere crusher (J), joining throughs in the bucket elevator (K). Sizing is done over a three-deck, 4- x 8-ft. Telsmith vibrating screen (L), followed by one 3- x 8-ft., double-deck (N). Special fine products are screened over a 2- x 4-ft. 6-in. screen (M). Oversize from screen (L) is returned to crusher (J) by belt conveyor (P). Bin storage (O) is 100 tons in six compartments



Quarry of New Enterprise Stone & Lime Co. Primary crusher was moved from the plant to the center of quarry and placed below ground level with belt conveyor to carry throughs to revolving scalping screen

air compressor. Dale W. Detwiler is superintendent of the plant, which is one of four plants operated by the New Enterprise Stone and Lime Co. A. R. Amos, district manager for the Smith Engineering Works, Philadelphia office, designed the plant and furnished much of the equipment.

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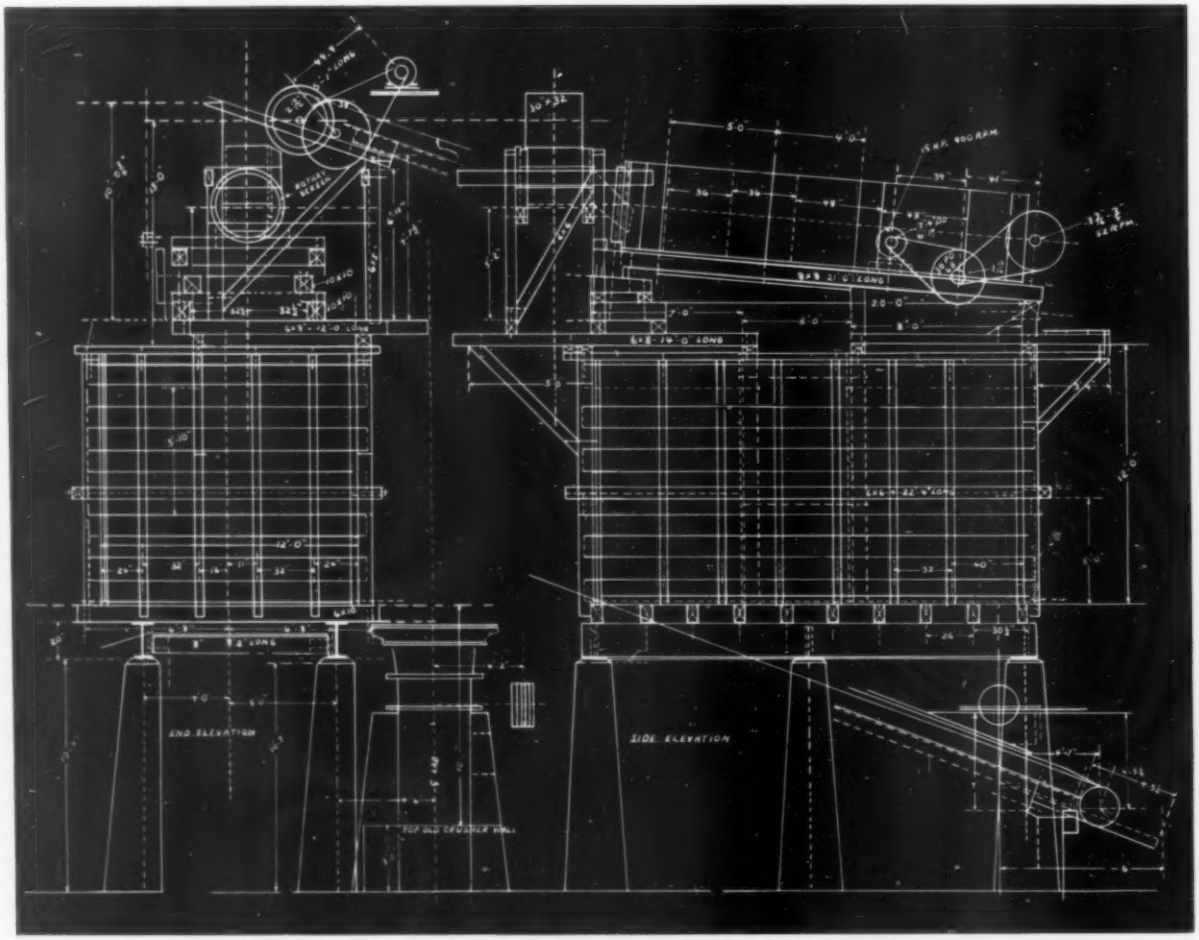
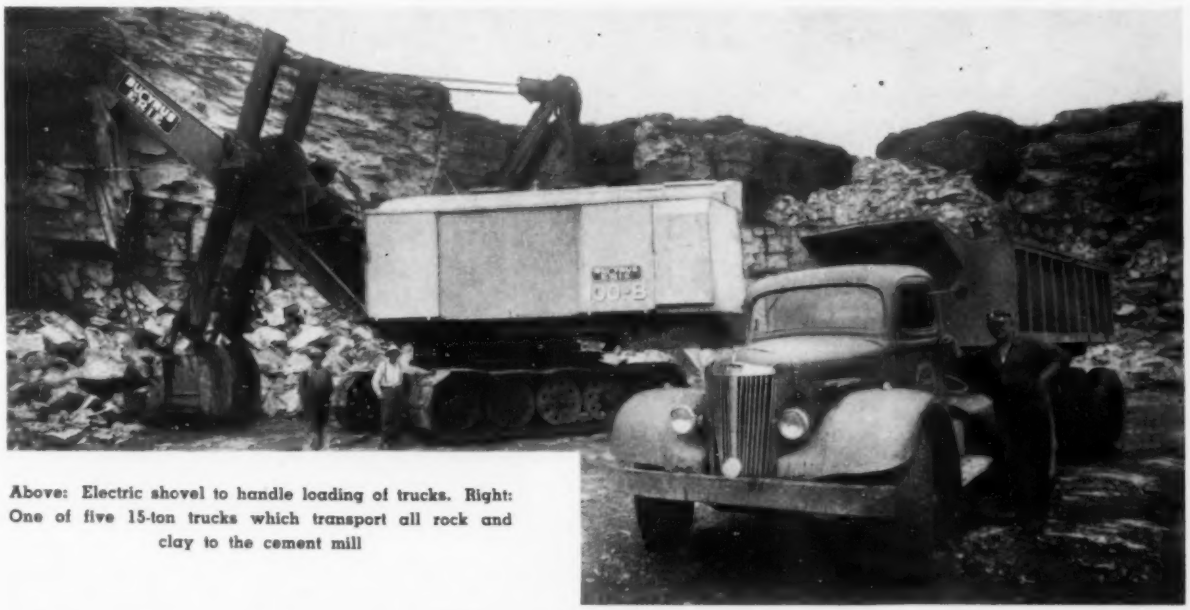
MEMPHIS STONE AND GRAVEL CO., Memphis, Tenn., has been awarded a contract for something less than $500,000 for surfacing streets, roads and walks at an Air Forces Concentration Command.

STANDARD SLAG CO., Youngstown, Ohio, received an order from the city for 4,700 tons asphaltic concrete.



Elevation views of screening plant, showing location of crusher and belt conveyor

From Quarry to Mill with 15-Ton Trucks



Above: Electric shovel to handle loading of trucks. Right: One of five 15-ton trucks which transport all rock and clay to the cement mill

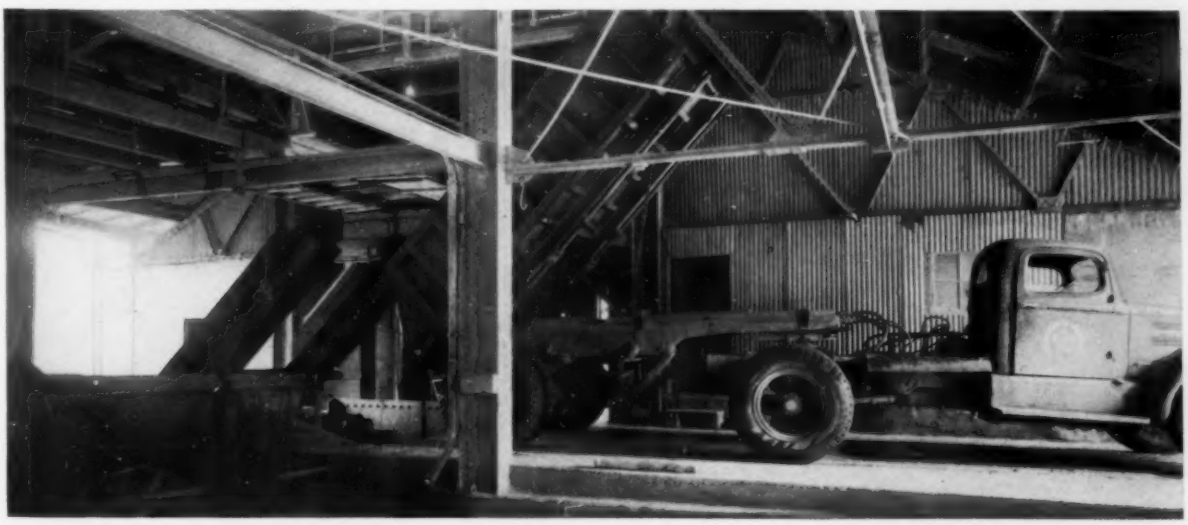
As part of its recent extensive modernization program at Dixon, Ill., the Medusa Portland Cement Co. has converted to motor truck haulage in the quarry. Locomotives and industrial cars were displaced because of obsolescence, and large capacity trucks substituted at the shovel to reduce the operating time in the quarry. A 4-cu. yd. 100-B Bucyrus-Erie electric shovel, crawler-mounted, had gone into service the year before. Flexibility and maintenance were other factors taken into consideration.

Five heavy duty trucks handle the raw materials, three on stone, one on clay and one for stripping—to supply the cement mill requirements in a 5-day week. The trucks are White semi-trailers with Truck Engineering Co. bodies raised by Gar Wood single-cylinder hydraulic lifts. They are end-dump and haul 15 tons of stone to the load over a distance of one mile to the plant.

Location of the primary crusher in relation to the crushing building made it desirable to install a special hinged runway at the crusher that is identical to the system in use at the company's Wampum, Penn., mill. It was described in Rock Products, June, 1941, pp. 59-60.

This runway is of heavy steel

(Continued on page 83)



Showing 15-ton truck dumping by hydraulic hoist into primary crusher. Note hinged runway over crusher

Reduce Gravel to Sand to Meet Specifications

River Sand and Gravel Co., installs all-steel overhead conveying system and adds impact type crusher

By WALTER B. LENHART

Impact type crusher to make stone sand. Tram car used to build up ground storage of gravel

THE RIVER SAND AND GRAVEL CO., Owensboro, Ky., is a long established producer in that section, having been in the business at its present location some 27 years. Two years ago the company with its own crew rebuilt the screening plant in Owensboro and constructed an all-steel overhead conveying system for building up ground storage materials, particularly two grades of sand.

About a year ago, having found it necessary to crush a specially tough gravel to meet local specifications, the company installed a 30-in. Stedman impact type crusher. It has a single heavy-duty cage which is enclosed in a suitable housing and is provided with manganese steel liners and breaker plates, upon which the wear occurs.

How Crusher Operates

Materials are fed to the impact-type reduction crusher through a large feed opening in the charging side. Dropping, the feed is struck a positive blow at right angles by the fast revolving pins in the heavy manganese steel cage, then again by material impinging on material. After the initial crushing, the particles pass through the openings between the impact pins, being projected against the heavy manganese steel breaker plates in the cover and ends of the machine, resulting in a further reduction in particle size. From this point on, a further reduction occurs as the stone dropping from the breaker plates is struck again by stone passing through the impact pins and out of the cage.

The cage is 30-in. in diameter and

Ample storage facilities of the River Sand and Gravel Co. Note conveyor tripper and, to the right, the concrete storage silo

about 10-in. wide and is driven by a 30-hp. motor through a V-belt drive. The capacity of the machine varies from 25 to 75 tons per hour depending on the fineness of the finished product desired. The product size is controlled by the speed of the cage, which runs in the 450 to 1200 r.p.m. range; the higher the speed, the greater the ratio of reduction.

The bars of the cage take considerable wear and are of heavy manganese steel. One cage arbor will handle several thousand tons of 1½-in. gravel, reducing it to No. 7 or No. 8 gravel. The No. 7 size is 100 percent passing ¾-in. with a tolerance of 5 percent retained on ⅛-in. The No. 8 is 100 percent passing ½-in. with a tolerance of 5 percent retained on ⅛-in.

The bars are replaced or built up by electric welding. It is relatively simple to take out the cage and replace it. The operator considers the performance highly satisfactory.

The crusher is a small unit, simple to install, low in first cost and easy to operate. This machine weighs about 7350 lb. and is mounted in the superstructure of the screening plant on relatively light timber foundations. The machine will operate either wet or dry, and in this installation only the water that clings to the gravel as unloaded from the barges is present. This water, though small in amount, aids in keeping down the dust. By returning the oversize material from the screen and operating the crusher at various speeds, practically any desired size of aggregate can be produced.

Steel bin to the left for truck shipments, and bin and chute arrangement to the right for barge shipments

One of the two loaders which are used extensively in making truck shipments

The River Sand and Gravel Co. has a 10-in. Holtz dredge pump equipped with a Swintex nozzle. The dredge operates on the Ohio river and has a capacity of 700 to 1000 tons per day. A preliminary sizing is made on the dredge of the two sand sizes and the gravel. These products are unloaded at Owensboro with a steam-driven Wiley Whirley Hayward clamshell rig. This rig can load direct to a Butler bin or to a hopper nearby that serves the screening plant via a belt conveyor and gravity feeder. In the screening plant, one Seco and one Symons screen make the desired sizes which, for the sands, pass to the overhead conveyor system, thence to ground storage. The coarser sizes can go direct to a tram car mounted on a superstructure or to the gravel crusher. If to the former, the tramcar is pulled via a cable along this trestle and dumped so as to build up the ground storage pile. The new conveyors on the sand side are driven by a 7½-hp. (Allis) electric motor through Falk reduction units. All reclaiming is done by Barber-Greene loaders.

The sand storage system and belt unloader were all designed by P. A. Yager, president and general manager of the company. It is a neat and workmanlike job. The plant is located near the center of the city at 701 E. 2nd St. F. M. King is assistant superintendent and in charge of the operations.

Cleaner Plant with Direct-Firing

Medusa Portland Cement Co. improvements at Dixon, Ill., plant also include kiln dust collectors and heat recuperators

By BROR NORDBERG

DIRECT-FIRING coal mills and heat recovery equipment have been installed on the six kilns of the Medusa Portland Cement Co. plant at Dixon, Ill. These installations, and equipment to collect clinker dust, represent the kind of improvements made by Medusa in several of its mills during recent years.

The Dixon plant is dry process, with six 8- x 100-ft. rotary kilns. Until the kiln burning department was modernized, the kilns were fired from a centralized coal-grinding plant and clinker was cooled through individual 6- x 60-ft. rotary coolers.

In connection with direct-firing, the entire coal-handling department was remodeled. Coal is ground to minus ¾ in. through a Jeffrey coal pulverizer and is elevated and placed by screw conveyors into coal mill feed bins of 150 tons capacity each. These bins are hopper-bottomed, for direct gravity feed into the unit mills which are a floor below the kiln operating level.

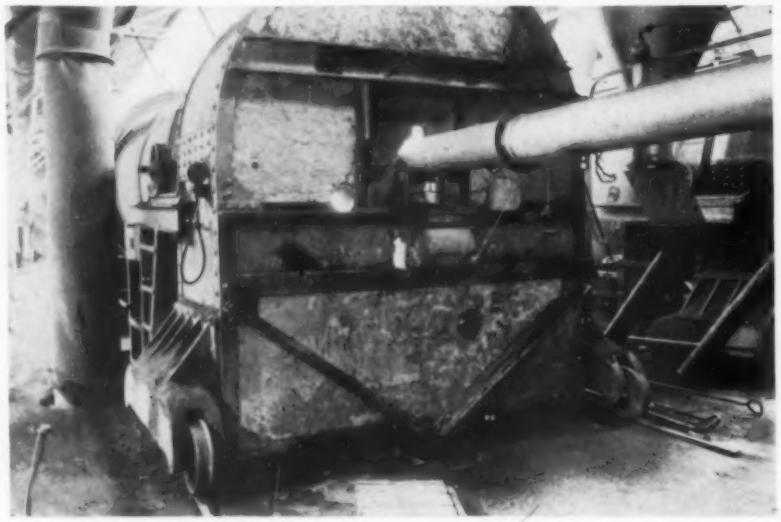
Operation of the mills is no different than in the majority of plants. Heated air for drying the coal is drawn from the kiln hoods and passed through cyclones to trap clinker dust before entering each of the six unit mills. The pulverizers are No. 352A Raymond bowl mills. Air drawn from the kiln hoods is tempered to 300 deg. F. at the point of entrance into the mills and the mixture of coal and primary air enters the kilns at 200 deg. F. Burner pipes are water-cooled. Coal is ground to 75 to 80 percent minus 200-mesh.

Dust Collection

Each kiln now has a type C1 Vanderwerp recuperator to preheat secondary air for combustion and to quench the clinker before entrance from each kiln into its clinker cooler. Each cooler has been shortened to 45 ft. and clinker from all six discharges into a Peck continuous conveyor for delivery into storage. At this stage the clinker has been cooled sufficiently to be held in the hand.

Each kiln has an individual Western Precipitation 9VD size 30-5 Multiclone dust collector to collect all the clinker dust from the firing end of the kiln — from the hood, coolers and cyclones. These collectors, which are equipped with cast iron liners to withstand abrasion, were put in for the purpose of keeping the plant clean. Each has a No. 50 Clarage suction fan driven by a 25-hp. electric motor, to pull the dust through the rotary cooler from its discharge end and through an enclosed dust chamber into the collector. Dust trapped in the cyclones, which are part of the unit coal mill installation, and from around the kiln hoods finds its way into the dust collectors through the main header.

Each collector handles about 13,000 c.f.m. of air at 250 deg. F. and collects over 90 percent of the clinker dust that would normally be lost. The dust, about 10 bbl. per day per kiln, is continuously fed out from each collector into an enclosed screw conveyor and drops by gravity through a spout onto the Peck conveyor. It is thus continuously mixed into the clinker as the clinker is carried to storage.



One of the kiln hoods, equipped with heat recuperator, is fired through water-jacketed burner pipes

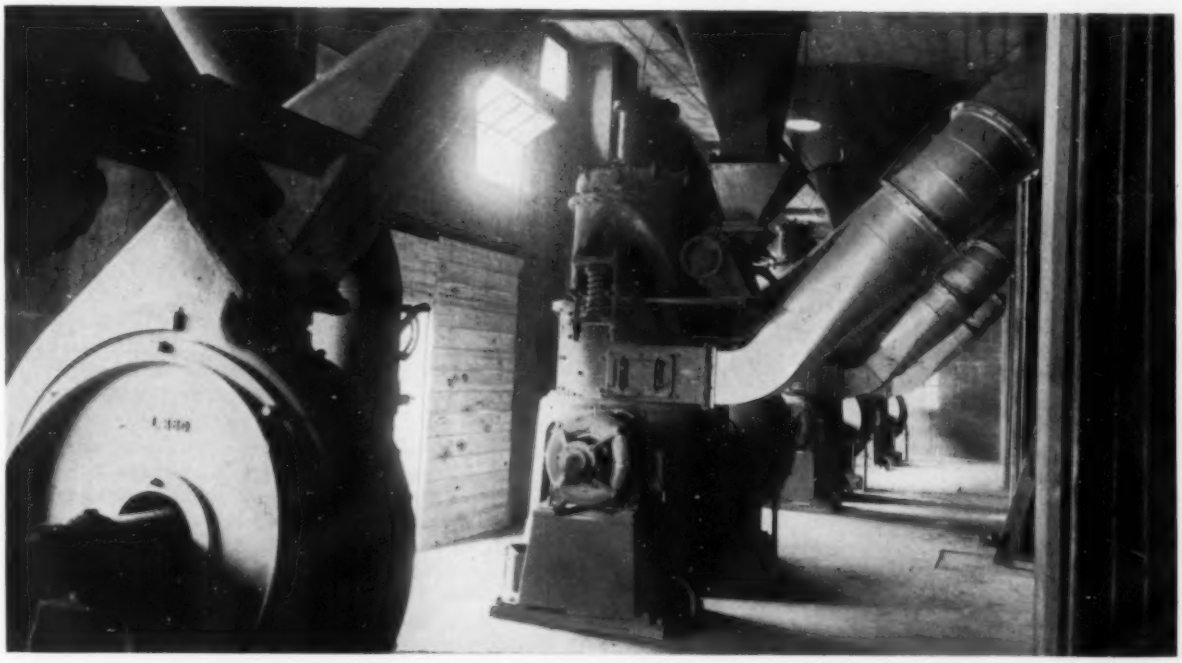
Packing

Another improvement at the Dixon, Ill., plant of the Medusa Portland Cement Co. comprises a new stockhouse and packhouse equipment. The new stockhouse consists of 12 new concrete silos, 100 ft. high and 24 ft. 6 in. diameter, to supplement six 50- x 100-ft. silos by additional capacity of 144,000 bbl. They were built by McDonald Engineering Co.

Construction of the silos is unusual in that they have self-cleaning steel hopper bottoms that converge to a single draw-off outlet for each silo. No use is made of the interstices.

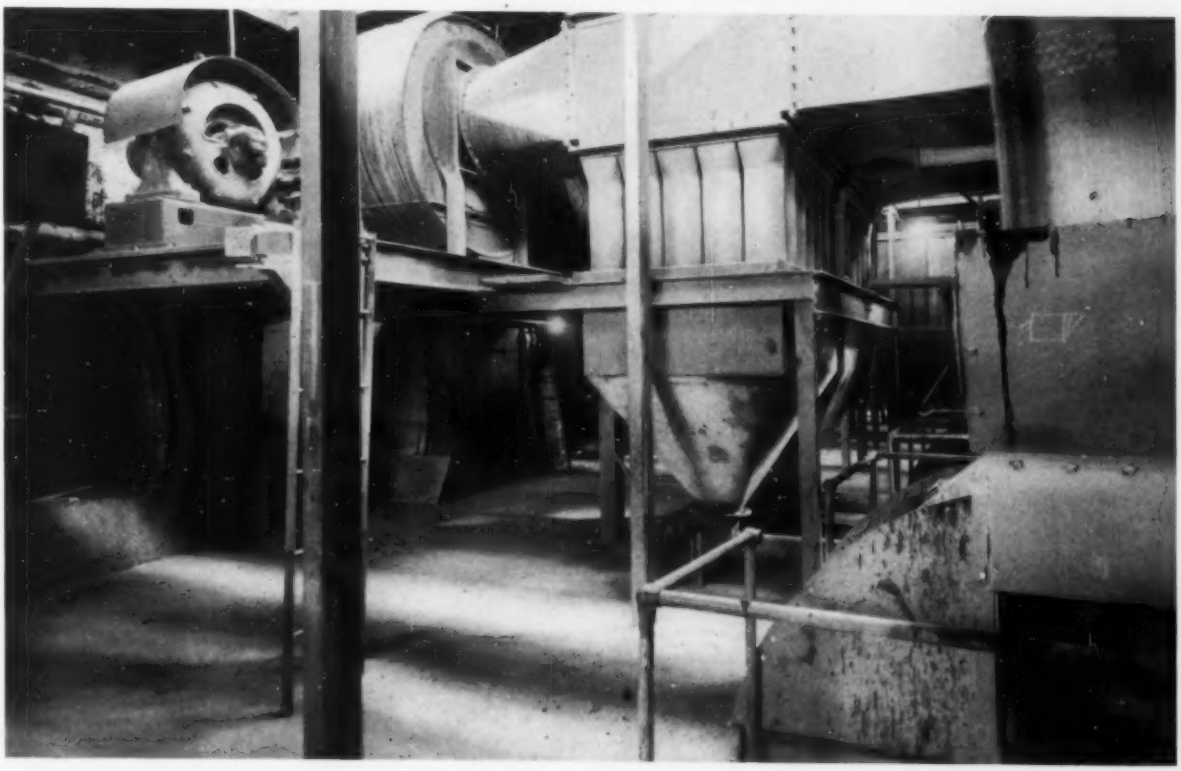
Cement is pumped into the silos by an 8-in. Fuller-Kinyon pump and

(Continued on page 58)



Three direct-firing coal mills, each serving a kiln. Entire coal handling department was modernized, coal being pulverized to minus ¾-in. before it is conveyed into coal mill feed bins.

Battery of dust collectors serving kilns. Dust from firing end, kiln discharge and from rotary coolers is collected and fed by screw feeders to clinker drag conveyor. Fan is shown to the left, and coolers are to the right



Million Yards Concrete for Dam

Big power development in Northern Quebec, Canada. Ship in by plane all crushing, screening and concrete batching equipment

FIGHTING against time, frozen ground, snow, ice and extremes of weather, the seventy million dollar Shipshaw power development carried out in the wilds of Northern Quebec by the Aluminum Co. of Canada, represents one of the most remarkable construction jobs undertaken in this war.

To get the picture of Shipshaw one must visualize the great Saguenay river which is fed by lakes, rivers and streams from an area of 28,000 square miles. Much of this water rises hundreds of miles north, up in the latitude of James and Hudson's Bay. From here the water flows down a series of rivers into Lake St. John. Lake St. John flows into the Saguenay river which later joins the St. Lawrence, several hundred miles below Montreal.

Five big dams were built to control the flow through the turbines of the Saguenay power project, and a great channel was dug through solid rock. When the whole Shipshaw project is completed, the installed capacity will be 1,500,000 hp., equal to the total development at Niagara Falls.

At one time over 10,000 men were employed on this job, requiring hundreds of trucks, tractors, trains, cranes, cars, concrete mixers, rock crushers, drills, bulldozers, shovels, etc., and then operated under extreme difficulties.

The immensity of the undertaking is best conveyed by quoting a few figures:

Construction work at Shipshaw alone required the excavation of 5,492,396 cu. yd. of earth and rock; the pouring of 850,000 cu. yd. of concrete; the use of 11,600,000 lbs. of reinforcing steel and 3,100,000 lb. of dynamite.

Likewise for the Passe Dangereuse job, the contractors excavated 66,000 cu. yd. of earth and rock; poured 140,000 cu. yd. of concrete and employed 1,600,000 lb. of reinforcing steel and 60,000 lb. of dynamite.

The work at Shipshaw necessitated diverting the Saguenay river so it now flows through a canal formed

	Shipshaw	Passe Dangereuse	Total
Power Shovels and Cranes	38	6	44
Trucks (21 of which were of 20-ton capacity)	385	140	525
Tractors	50	17	67
Average Daily Consumption of Cement (carloads)	26	5	31
Concrete Mixing Capacity (cubic yds. daily)	6,400	1,400	7,800

Batching plant for concrete had a capacity of 8300 cu. yd. of concrete per day. Twenty-six carloads of cement were used daily

Canadian workmen operating wagon drills on Shipshaw project under adverse winter conditions

National Film Board Photo

Looking down Shipshaw canal toward the headlock. There are six dams in this power project. Note long storage conveyor system for aggregate storage and concrete batching plant on the shore, to the left

partly by a series of concrete dams. This canal is a little over 1½ miles long, with a minimum width of 300 ft. and a minimum depth of 33 ft.

The powerhouse itself, as already mentioned, is 800 ft. long. It is built of concrete.

Between the powerhouse and the Saguenay River on the downside, a solid rock barrier was left separating the tail race from the river. This barrier was removed last November in one blast. It contained about 18,000 cu. yd. of solid rock, into which were drilled about 30,000 linear feet of diamond drill holes in addition to a number of coyote holes which were driven under the rock from the landward side. The holes were loaded with approximately 83,000 lb. of dynamite and the entire mass was fired in one shot. This completely removed the barrier and deposited part of it in a natural hole and the remainder into an additional hole provided in the bed of the tailrace. Wagon and jackhammer drills were supplied by Canadian Ingersoll-Rand and well drills were Keystone, Armstrong, and Bucyrus-Erie.

The building of the dams, the lining of the tunnels and erection of the powerhouse necessitated the use of 990,000 cu. yd. of concrete.

Cement, furnished by Canada Cement Co., Lt., was brought to the works; a trainload every day.

Sand came from local sources, while gravel or stone needed was taken out of the excavation of the canal and power house site.

A huge stone crushing plant was erected at Shipshaw. This broke the stone crushed down to several sizes, ranging from 1 in. to 3 in., depending upon the particular job for which it was going to be used. Crushers were supplied by Traylor Engineering & Manufacturing Co. Link-Belt conveyor equipment was used.

Two large concrete mixing plants,

National Film Board Photo

Excavating rock for the canal to divert the Saguenay river 1½ miles overland to the new Shipshaw powerhouse

each unit with a capacity of 4 cu. yd., were employed. One was erected near the powerhouse and the other near the intake. Water, of course, was piped from the river.

Because of the urgency for speed and because work had to be carried on in all types of weather, day and night, the handling of concrete was reduced to simplified basis. No conveyors were used.

Material for the mixers was brought together by trucks. The concrete was poured into specially-designed C. S. Johnson buckets set on trucks. The trucks then moved to the powerhouse or dams, where the buckets were lifted out of the trucks by cranes and the concrete dumped into the forms.

Because of weather conditions, especially in the winter when the thermometer dropped to 40 and 50 degrees below zero, a minimum amount of water was used in the mixing. This made it necessary to use vibrators for proper setting.

Actual construction at Shipshaw was started in the fall of 1941. In November of the following year, the first generator turned over. Since then a new generator has been started up each month and by the end of this year—a little over two years since work was started—the whole project is scheduled for completion.

Cement Kilns for Other Purposes

IT IS UNDERSTOOD that a few portland cement companies are already using rotary kilns for other purposes than the manufacture of cement; three or four are sintering or nodulizing iron ore, manganese, phosphate or some other mineral. One is making lime, one is grinding agricultural limestone. Several are using their machine shops for sub-contracting on war work.

The following letter has been received by all portland cement companies from the Building Materials Division of the War Production Board:

"With non-essential construction eliminated and with the bulk of essential civilian and war construction nearing completion, the cement industry will probably be called upon to supply only approximately 108 million barrels of cement for domestic use in 1943. There will, in addition, be some cement exported, but as we get further into the year 1943, even with this additional requirement cement demand will be at about 50 percent of potential capacity.

"This demand may be unevenly distributed over the nation. Some areas will require the greater percentage of local cement production while large surplus capacity will exist in other areas. In the latter case, some plants will operate at a considerably reduced rate while other plants may close down for extended periods, if their facilities cannot be used for manufacturing other war materials.

"Therefore a number of cement manufacturers may wish to use their machinery for continued direct contribution to the war effort. It has been suggested that cement-making machinery can be converted to various other uses such as nodulization or agglomeration of iron ore for open hearth and blast furnaces, production of sponge iron or pig iron, calcination of petroleum coke, dolomite and limestone, drying and calcining of bauxite, clay, manganese ore, phosphate ore, etc. In some of these processes, crushing, grinding and flotation equipment, as well as wet or dry classification machinery may also be called for.

"In the event you are interested in converting your plant in whole or in part to the manufacture of war materials other than cement, please give us the necessary details and we shall be pleased to assist you as much as possible in disseminating this information among the various war agencies.

"This Section has, from time to time, been requested to assist in locating available second-hand cement kilns which could be used in other industries, making essential war materials. Utilization of this type of equipment saves critical materials and conserves valuable man hours in fabricating similar new equipment. If you have any kilns which are idle and which you do not expect to operate again, and if you care to list them with us, we will use such information in handling inquiries for this type of equipment."

National Film Board Photo

Immense dam under construction on the Saguenay river. Shipshaw dam is larger than Boulder dam in the United States, having an installed capacity of 1,500,000 hp.

Mica in Connecticut

A GEOLOGICAL SURVEY report from Washington, D. C., reports some sheet mica of good quality in the Anderson-Bailey deposits in the southern part of East Hampton township, Conn. These deposits are being worked by the Connecticut Mica & Mining Co.

Elements of Flotation Process

A type of processing that probably will have wide application in rock products industries

Introduction by
WALTER B. LENHART

THIS IS by way of introduction to a series of articles to follow on the elementary principles of flotation as applied to industrial (non-metallic) minerals, by John Dasher, formerly with the U. S. Bureau of Mines, now a consulting flotation specialist of the firm of Norman, Dasher & Newell, La Marque, Tex. There are, of course, numerous textbooks on flotation and a great volume of literature in the proceedings of the American Institute of Mining and Metallurgical Engineers, and the papers and reports of the Bureau of Mines. Practically all of this literature is too technical and involved to interest the rock products man, and were he to attempt to digest it, probably he would see little application to his own operation.

Essentially the process is not complicated. In actual practice it is as simple as a screening operation. It is a method of separating one or more mineral products from others.

To such readers as those who follow the sand and gravel business, flotation may not appeal to them at first glance, but to survive in that industry the operator must take advantage of all the "angles." How many sand and gravel operators know exactly the mineralogical composition of their sand? Do they know whether or not they are selling for a few cents per ton (as sand) some part of the sand that may be worth far more than that?

The writer of this introductory article has had over four years experience as a field editor of ROCK PRODUCTS, and 23 years experience in the western states as a mining and metallurgical engineer; and during that time has acted as a superintendent or consulting engineer for a dozen or more flotation operations in the metallic and non-metallic field. For over 20 years he has fathered the application of flotation to the non-metallic field and let me assure all the readers of ROCK PRODUCTS, that flotation can find a place in all its branches of the industry.

I have seen sand being dumped back into the Ohio River (and some of its tributaries) because that sand had coal in it. For a few cents a ton that same sand could have been processed by flotation, the coal removed and the sand made marketable. There are, no doubt, sand producers in many places in the United States who could sell their product to the glass industry—simply by finding out what the impurities are that prevent the sale and removing those impurities by flotation. It can be done and is easily in the realm of good economics.

Moreover, there are sands that contain illmenite, zircon, rutile monazite and other rare minerals which are very much in demand for many industrial purposes. In some instances, perhaps, the clay which sand

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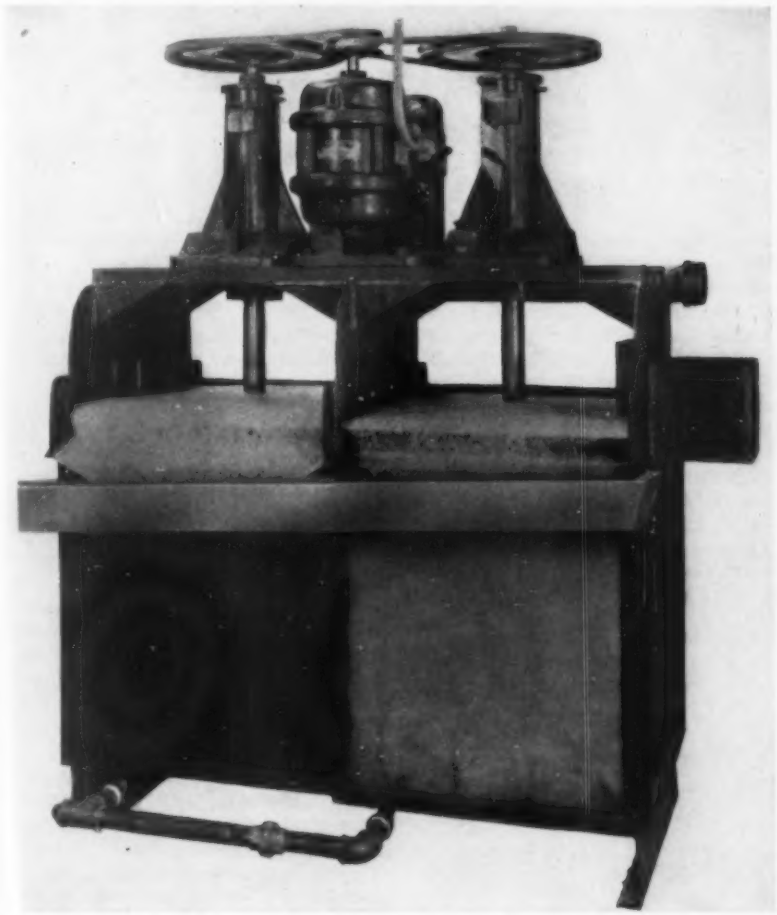


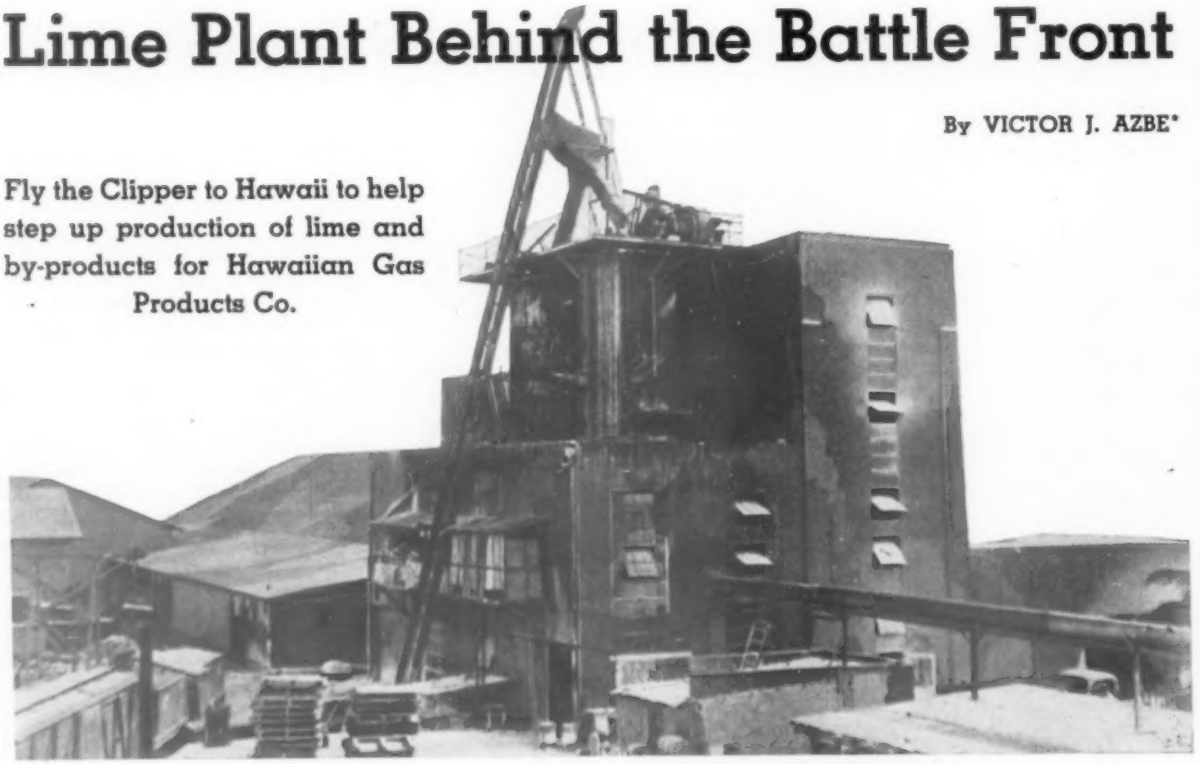
ypical modern flotation machine which is coming into more general use in the rock products industries

LIME FORUM

Lime Plant Behind the Battle Front

By VICTOR J. AZBE*

Fly the Clipper to Hawaii to help step up production of lime and by-products for Hawaiian Gas Products Co.



Shaft lime kilns of the Hawaiian Gas Products Co. Note camouflaging on buildings

A LIME PLANT whose operation could readily serve as an inspiration to any lime man is that of Hawaiian Gas Products Co., Honolulu, Hawaii.

This is because it is so completely geared to the vital business of prosecuting the war and is industrially, at least, located practically in the front line trenches, as what is there beyond Hawaii but the battle where our future is being decided?

Hawaii has undergone a tremendous change since the fateful December seventh. Preceding the war, next to the sugar and pineapple industry, the tourist trade was of greatest importance. Since the latter business has collapsed and every tourist has vanished, the big business overnight became *WAR*. Hawaii and now particularly the island of Oahu, is a fortress under martial law, where everyone has to justify his existence. Whether a civilian or any one of the military he must somehow contribute, first towards defense, and secondly towards an early winning of the war. Idleness is not tolerated and not even a General may have his wife with him in the Islands unless she works in some public manner.

Hawaii is now secure and with it our Mainland; the enemy had a good chance that December seventh and would have had another if the battles of Midway and of Southern Pacific had not gone as they did, but Hawaii still is, and it will continue to be, the primary naval and military base and main supply and repair depot for virtually all Pacific operations.

This means tremendous preparations and intensive activity which, no doubt, will continually increase with the extension of Pacific penetration.

Lime Products Essential to War Effort

Since lime and lime products enter so irreplaceably important into the manufacture of commodities essential to the prosecution of the war, it is natural that Hawaiian Gas Products Company or "GasprO" for short, finds itself expanding in many diverse directions and virtually becoming a civilian unit of both Army and Navy Departments.

So of all the many calls I ever received, none was more welcome than the request to come to Hawaii which was accompanied by priority issued personally by the Commandant of Pearl Harbor Navy Yard, entitling me to the use of Pacific Clipper. I was to come to help plan improvements and expansions, particularly in respect to carbon dioxide production from limestone.

In analyzing the feeling of exhaltation I noted that it was only in part due to the chance of going to these exotic islands and in the main to be useful where usefulness should count at its most. The Clippers when outward bound do not carry passengers these days, not even high rankers, except when the Navy is rather sure of their immediate usefulness. Although every ounce of their carrying capacity is utilized to nearly the limit of safety, the main purpose is for the carrying of vitally important freight, the luxurious passenger quarters remaining virtually empty. Nowhere are priorities and rationing more of a factor, so in transporting me by this exclusive means I had sense enough to realize that they were not transporting me as any kind

*Consulting engineer, St. Louis, Mo.

of a personage, but rather as a sort of pill—a bit heavy but still a pill—which if swallowed may somehow react, so that plant capacity would be increased and efficiency improved. As it goes, the same pill in one organism may be very helpful, while in another it may be something just bitter to swallow and useless, but they were willing to take their chances and fortunately it worked out well. However, as will be seen later, the credit goes to the organism, or let's be plain, to the wonderful and exemplary organization this plant possesses, rather than to me.

There is little to say about the trip from St. Louis to San Fracisco or from there to Honolulu justifying space in such a busy publication as this, except that the distance of close to one-fourth around the word was made in about a day of actual flying time, while by train and ship it may have taken a couple of weeks.

CO_2 of Vital Importance

On arrival, after passing the military sentry, I found the plant splotchily painted many variegated hues into a state of camouflage. It proved, except for the two vertical kilns and the hydrating plant, a manufactory of chemicals and gases, such as oxygen, acetylene and hydrogen, of lime and even more important than lime itself, of carbon dioxide gas from the lime kilns. If a lime kiln does not operate correctly it will still make lime but its gases will be low in CO_2 concentration and if low or dirty, CO_2 absorber efficiency is poor and then the efficiency of the entire intricate CO_2 plant will be impaired, which was the condition that prevailed and which is something that in these days cannot be permited.

Carbon dioxide as extracted in this plant is put to many important applications. It may be used for charging Coca Cola bottles on one hand or it may be released to charge a life raft of a sinking bomber to save the lives of such of the crew as may still be living.

One may think immediately what sort of a war essential is Coca Cola, but I for one cannot imagine anything more characteristically American, except for the American Flag, than a bottle of Coca Cola. It must be psychologically of inestimable value for the hundreds of thousands of our boys in the hot climes of the south, thousands of miles from their home shores, to be away maybe for years and dreaming of, as they so wistfully call, "God's Country," to be able to pop a nickel into the slot and draw out a bottle of "coke" just as they did back in Siluria or Hannibal. And it tastes the same too, and it is the only thing that does taste the same, and nothing except a letter can bring home closer to mind.

As war and fire are practically synonymous and CO_2 will prevent or extinguish fire better than anything, it finds innumerable uses, on land, in the air, or at sea, as a strictly defensive weapon, and there is no crash truck, no war plane or war ship without large quantities of it, life rafts are inflated with it and even life preservers.

Of course everything made on Honolulu could be shipped from the States, but 2400 miles of water intervene and even if there was sufficient mainland capacity, there would be insufficient cargo space. In Hawaii these days you may be the possessor of a liquor permit entitling you to one bottle a week but it is quite useless as every bar and liquor store is closed on account of shortage of cargo space. Occasionally a bar may get hold of some beer but that so infrequently that it becomes immediately overfilled and a long queue collects outside. One employee at the plant said to me rather disgustedly, "Last time they were open I had to wait in line forty minutes to get just one little bottle of beer."

So it is lucky for all of us that ALLAN RENTON, president of GasprO, developed the plant as he did during the days of peace and it is also lucky that he is one of the highly energetic, determined and confident type, and with it all, as the employees told me, very generous; qualities that for greatest success supplement each other but seldom go together. One of a type inclined to play safe and think matters over would be definitely in the way as the war is on and things are needed, or may be needed, which

CO_2 absorption towers finished to look like large gas cylinders

Allan Renton, president of the company, ready for any emergency

is the same, and must be obtained NOW this month, not next year. To how many American executives could he be an example, executives with plans, sound plans, which they carry around with them all their lives and are buried with them, compared to Renton's, lives almost wasted for the good they did.

I always had a pet idea that every one should get all the possible fun out of life, but in addition he should justify his existence and leave the world in parting in some measure better or more complete for his living. Mr. Renton with his happy disposition also has fun, but that seems in no way to interfere with full exercise of his strategic usefulness.

He is ably seconded by L. H. BINGHAM, vice-president and general superintendent, who has more of ubiquitous ability than anybody else I know and he needs this too as he has under his management the Iwilei plant with its vertical kilns, hydrator and gas compression plants, the Waianae plant with rock quarries and rotary kiln, and the acetylene plant where lime from carbide is combined with volcanic ash to produce an exceptionally strong sand-lime brick.

Many lime plant heads and subheads are so feeble, so anemic in their efforts towards improvement that it was an inspiration and revelation to see how management functions at the GasprO in Hawaii. Even very complex mechanical items, minute in nature, if unobtainable by purchase, are made new in their own machine shop. If policy dictated going ahead they went ahead and just as a matter of course surmounted all obstructions.

WILLIAM A. MORGAN, the chief engineer, is a whirlwind of energy, a

master of many physical laws, such as combustion, absorption, evaporation, dissociation, compression, condensation, liquefaction and solidification. He at one moment will be found with an engineering text book absorbedly studying it and munching Fig Newtons, while the next he may be at the lathe, turning out some intricate unit he just read about.

LEONARD D. HOLMAN is lime plant superintendent; he hails from Nevada. His ambition is to go deer hunting (after the war of course) in the high ranges of Nevada-Utah border, and I can think of no one I would rather go with. His present obsession is, however, his plant, and he painstakingly studies every issue of ROCK PRODUCTS. He can appreciate such a publication more than we can, as it is his only contact with the industry, since, naturally, he cannot go to visit a plant to see how things are done or discuss his problems with other lime men. They all positively hunger for information, and articles are not just read but *studied*, which is a different process altogether. Over here, after an author condensed probably several years of experience and devoted weeks preparing an article, the reader hastily glances over it and imagines he has absorbed it all.

Then there was K. T. MAU, the Chinese chemist, a graduate with a Master's degree from Hawaii University, a young but as able a lime chemist as one could find. We were born poles apart but through the free masonry of joint interest in lime, we soon were to each other as a pair of old shoes who for years have tramped painfully over the same rocky paths. It was a pleasure to work with him, subjecting the kilns to an analytical study, and in but a short time he raised CO_2 concentrations, thus greatly helping operations. His analytical and mathematical mind as also his ready grasp and exceptional memory was really impressive and his methodical tendencies and desire to do a job always better than is called for, put him in the category of a prize winner. In but a short time I did not even notice that we were of two different races, and when next I have dealings with a chemist I most likely will be wishing it was friend Mau.

As Honolulu is terrifically overcrowded with masses of humanity all strenuously engaged in some small or great manner to push on the war, I was extremely lucky to have Mr. Bingham obtain for me a rather delightful room at the famed Halekulani Hotel. Under my personal veranda there was a tropical garden, fronted by Waikiki Beach and beyond the entire Pacfic Southwest. In the distance there were always destroyers or gun boats on guard. The convoys coming or going would pass, and in the morning my alarm clock was the racket of the Dawn Patrol starting out on its thousand mile run into the Pacfic.

As soon as Mr. Bingham took me out to the plant and introduced me around, Morgan, Holman and Mau crashed in on me as a unit and while they did not say it they must have meant it—"It costs plenty to get you here, now what do you have to offer in exchange?" It took me a bit off my feet and if I had known Lillian of the office force then, I probably would have run to her for protection. She was another Chinese and another subject I, for censorship reasons, will not elaborate on, but that Chinese Welfare dinner—chopsticks and all, was wonderful and never will be forgotten.

EDITOR'S NOTE: The second installment and concluding article will relate the interesting problems encountered with both shaft kilns and rotary kilns and how they were solved.

Calcination

(Continued from page 50)

the plant is equipped to transfer cement from storage into the packing machine bins either by screw conveyors and elevators or by cement pump.

In the packhouse, there are four new-type 4-spout Bates valve bag machines, to pack standard portland cement and one, each, for masonry cement and waterproof cement. Each machine is hooked up to a Parsons bag-type dust collector and the dust collector discharges dust gathered from around the machine into a "dribble" screw conveyor. An elevator puts this cement back into the packing machine bin.

Each packing machine bin is set over a machine feed hopper, which is equipped with two Bindicators to maintain an average head of cement 1½-ft. high over the machine. The Bindicators are 12 in. apart vertically, and are inter-connected with a constant speed, chain drive on the Bates valve which releases cement into the hopper. Cement is automatically released into the hopper by action of the lower Bindicator and the top one shuts off the flow of cement. Cement is packed at the rate of 20 sacks per minute by the new machines and carried over a wire mesh conveyor into railroad cars. Bulk cement is loaded by screw conveyors which discharge into a truck-loading spout.

Pipe Plant Fire

UNIVERSAL CONCRETE PIPE CO., Pittsburgh, Penn., plant had a fire in its boiler room and offices which caused damage estimated at $5000.

One of the new packing machines with electric devices to control level of cement in machine hopper to constant level

Rock Drill Lubrication

Part 1: Functions of a lubricant

By FLOYD R. ANDERSON*

TO PROPERLY APPROACH the problem of lubrication of rock drills, it is first necessary to consider the functions of the lubricant in their operation. These functions will be classified into three general groups and each will be separately discussed.

The first and most obvious is that of reducing friction between companion parts which are in motion. Some of the energy transmitted by moving parts is lost in friction developed on their surfaces. One of the effects of friction is the mechanical removal of minute particles of material from the surface which ultimately leads to a serious loss of size of the parts. This effect becomes apparent as mechanical wear. Another effect of friction is the loss in mechanical energy which may reach the point where the retardation of motion of certain of the parts may seriously reduce the efficiency of operation. This is particularly true of the light valve parts in a rock drill where "sticking" during operation causes erratic drilling.

A more serious effect of friction is the heat developed on the surfaces of the parts. Part of the mechanical energy transmitted by the parts is transformed into heat. The greater the pressure between the moving parts, the greater will be the amount of heat developed, until a point is reached where actual seizure between the two will occur. Most often seizure and "scoring" develops when one surface or the other is heated to the point where it actually becomes plastic.

"Scoring" Develops into Fractures

Evidence of this state of affairs may be seen in the photomicrograph, Fig. 1, where a cross section through such a surface is shown at 1000 diameters. In this photomicrograph the surface appears as the horizontal line. The lightly etched area is the structure of the metal in its fully hardened condition. Immediately below the light area is one which appears dark.

Below the dark appearing area is one of intermediate shading which typifies the original structure of the part before localized heating had altered the structure. The development of the various zones will be briefly traced. To begin with, the entire structure of the field shown consisted of the light grey appearing constituent, representing the structure of the properly hardened part.

*Chief Metallurgist Gardner-Denver Co., Denver, Colo.

Surface heating of the part first caused localized softening or drawing of the steel, causing the appearance of the darkly etched zone. Continued surface heating, to the point where the zone near the surface was actually above the critical temperature of the steel (over 1325 deg. F.), caused pronounced plasticity of the surface, and seizure with the companion surface took place.

Stopping of the part by seizure or a momentary release of the rubbing surfaces eliminated further heating so that rapid cooling of the surface took place by dissipation of the heat into the body of the part. In effect, the heated surface was drastically quenched. This rapid cooling caused the zone heated above the critical temperature of the steel to be re-

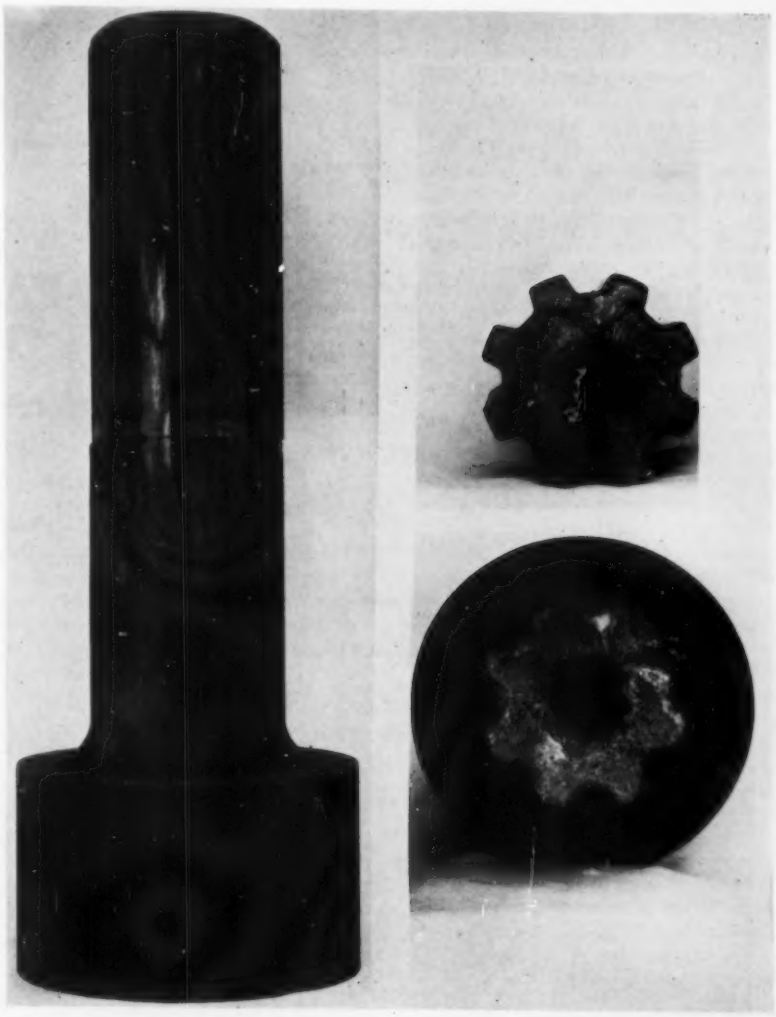


Fig. 2. Transverse breakage of a piston hammer caused by "scoring" of the surface

hardened. The zone thus re-hardened appears as the almost white etched surface structure. The underlying, dark etched zone had been heated to a range of temperatures from 400 deg. F. to about 1300 deg. F. Heating of the grey appearing zone had been insufficient to alter the original structure of the metal.

The tremendous changes at the surface of the part may be readily seen.

A great volume expansion of the surface zone occurred as the result of localized heating, which expansion was immediately followed by a sudden contraction due to cooling. This contraction caused the development of the crack shown at right angles to the surface. The piston hammer was thus on the way to development of the ultimate breakage depicted in Fig. 2. Once the crack had formed, it took only the normal stresses of continued operation to cause its growth to complete transverse breakage.

Functions of a Lubricant

Reduction of friction between moving parts is accomplished by interposing between their surfaces a liquid film that will keep them separated at all times during operation. The continued presence of such a pressure resisting film will minimize friction, with a corresponding reduction in wear; in the loss of mechanical energy, and will prevent scoring. This is the primary function of a rock drill lubricant.

The second is to prevent corrosion of rock drill parts. As is well known, the surface of steel parts is subject to corrosive attack, the severity of such attack depending on the character of the corrosive medium. The most common cause of such attack is the presence of water in the machine. Some water contains sufficient corrosive materials to do appreciable damage. Other types of water, however, carry in solution highly corrosive compounds so that the attack on the parts is very rapid. If such corrosive solutions are allowed to come in direct contact with the parts of the rock drill, "eating" away of the surface takes place. In its milder forms a coating of "rust" will form which can be rubbed off during later operation, no immediate damage occurring.

Continued repetition of this cycle, however, eventually leads to a loss in size which is often attributed to wear. Much of what is thought to be a rapid rate of wear is basically due to corrosion. Actually the parts are being dissolved away. The more active forms of corrosion will cause the development of pits in the surface of the part which pits may act as small notches to initiate failure by breakage. It has been well established that the simultaneous occurrence of corrosion and stresses, incident to normal operation, leads to a serious reduction of the strength of materials. In many cases the failure of rock drill parts by breakage can be traced to corrosion having occurred during operation, when the parts were being subjected to the normal stresses of such operation.

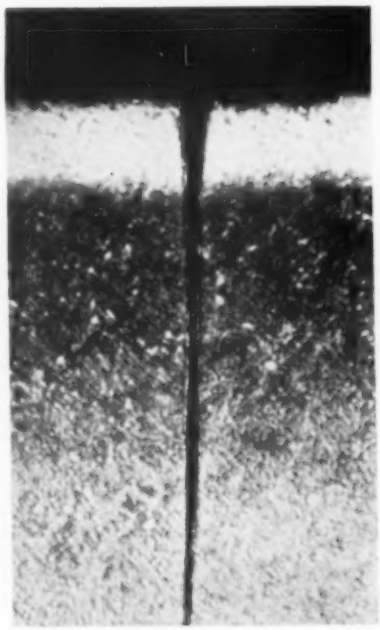


Fig. 1. Surface structure of a "scored" piston hammer magnified 1,000 diameters

Corrosion Important Cause of Wear

Effective prevention of corrosion lies with the protective presence of a film of oil on all of the parts of the rock drill. This protective film must be present during the idle as well as the active periods of the machine for corrosion has no respect for time or place. Thus, the second function of proper lubrication is that of preventing corrosion, thereby minimizing loss in size of parts and preventing early progressive breakage from the pits which may act as foci for the development of cracks.

The third function of a lubricant is to act as a sealing agent in the clearances between certain of the running parts of the drill. A certain amount of running clearance between companion parts of a rock drill is necessary to permit their unrestricted relative motion. Even though such clearances are held to a minimum, the absence of a sealing agent would result in a loss in efficiency. This is particularly true with the valve clearances and the piston-cylinder clearances. Efficient operation depends on the correct timing of the introduction of the air to one end or the other of the piston hammer head. Blow-by of the air in the valve assembly or the hammer-cylinder assembly causes a delay in the response of the parts of the actuating air and leads to loss of this efficiency of operation. The third function of a rock drill lubricant thus is its action effectively to eliminate the mechanical clearances necessary to permit movement of the parts.

To summarize, a lubricant must perform the following duties in rock drill lubrication:

(1) Reduce friction, thereby reducing loss in mechanical efficiency, reducing mechanical wear and preventing scoring of running surfaces.

(2) Form a protective coating on the parts of the drill to prevent corrosive attack by the water usually present in the machine during both active and idle periods, which attack causes loss in size and neuclei for breakage.

(3) Seal the running clearances necessary to operation, thereby permitting development of full efficiency of operation.

(To be continued)

Phosphate Producers Have Rubber Difficulties

REPORTS from the Tennessee phosphate field indicate that producers of rock dependent upon truck transportation for haulage to preparation plants are finding it difficult to get adequate tire and gasoline supplies. One effect of this situation is reflected in the fact that only one bid from Tennessee was made on the invitation of A.A.A. for 60,000 tons for Illinois during 1943, and that only 10,000 tons in the last half of the year. It is reported that so far (January) only 36,000 tons have been secured from Florida producers. The Illinois price by A.A.A. for coarsely ground, low-grade rock is announced as $13.50 in 1943; it was $12.80 last year.

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Determination of the Clinker Content

Use alkalimeter to determine clinker content of a clinker-limestone base masonry cement

By JOHN R. ROMIG[1] and V. E. WESSELS[1]

ABSTRACT

• A METHOD, and its underlying theory, for the determination of the clinker content of a clinker-limestone base masonry cement is discussed. The apparatus, which consists of an alkalimeter and an absorption train, is described and the procedure for the analysis is outlined. The method is relatively rapid, requiring approximately 45 minutes for a determination, and is sufficiently accurate for control purposes.

DUE TO THE DIFFICULTY in maintaining a constant feed rate to commercial grinding mills, it seemed desirable to develop a method for determining the clinker content of a clinker-limestone base masonry cement. Several methods, which are described below, were given consideration, but none of these were found to be entirely satisfactory.

(1) Limestone contents derived from loss on ignition determinations are indefinite due to the numerous and variable sources of loss besides CO_2, as well as the variation in the percentage of carbonate in the limestone.

(2) The determination of specific gravity for this purpose proved to be impracticable due to the small range of difference in the densities of limestone and clinker.

(3) Physical separation by gravity or centrifugal sedimentation of clinker from a suspension of the cement in a liquid with a density between that of limestone and clinker, is not practical due to adherence of limestone to the surface of the clinker, and vice versa.

(4) Through knowledge of the composition of the limestone and clinker of any given cement, it is possible to develop balance formulas involving the percentages of SiO_2, MgO, CaO, and ignition loss, which will give the clinker content within close range. However, since these formulas must be derived under the assumption that the raw materials are of constant composition, any given set will not be applicable in all cases.

(5) Estimation of the clinker content by miscroscopic observation of the cement is both difficult and time consuming, thus making this method unsuitable for control work.

The method described herein consists of making a CO_2 determination and an acid titration on the sample. The method can be applied to all clinker-limestone base cements which contain no large amounts of other chemically active constituents. The presence of chemically inert substances will not reduce the accuracy of the determination.

Apparatus and Reagents

The CO_2 determination is made by means of an alkalimeter and an absorption train as illustrated in Fig. 1. The alkalimeter A consists of a reaction flask, a water condenser, an acid dropping funnel, and an Ascarite absorption tube for the removal of CO_2 from the incoming air. The drying tubes B, C, and D contain Drierite, anhydrous $CuSO_4$, and Drierite, respectively, for removal of water and HCl vapors from the gas stream. These tubes should be of sufficient size to insure complete removal of the water and HCl vapors without too frequent changing of the drying reagents. The weighing bottle E contains Ascarite, with an upper layer of Drierite for removal of the water formed by the reaction between Ascarite and CO_2. After passing E, the remaining gas (air only) passes through traps F, G, and H, with G containing concentrated sulfuric acid. The gas flow is induced by means of a water pump, and controlled with a screw clamp.

[1] Assistant Chemist and Chemical Engineer, Missouri Portland Cement Company, St. Louis, Mo.

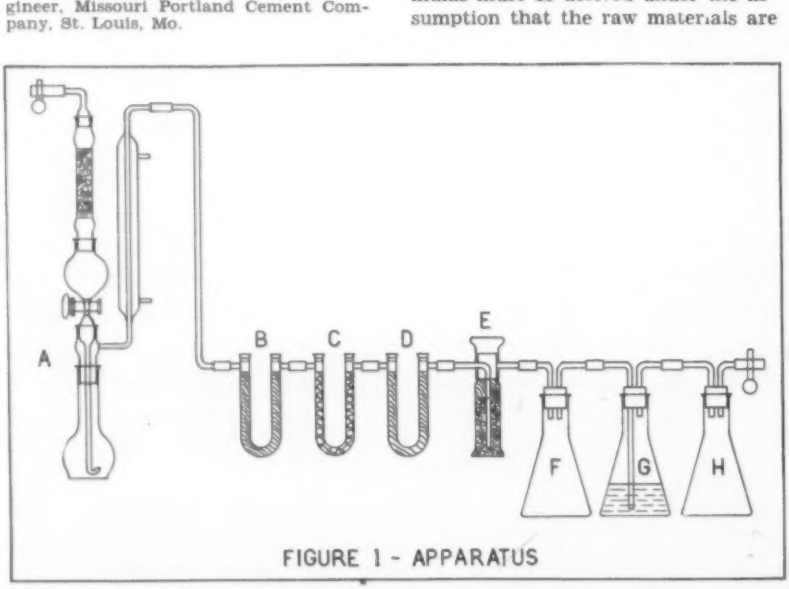
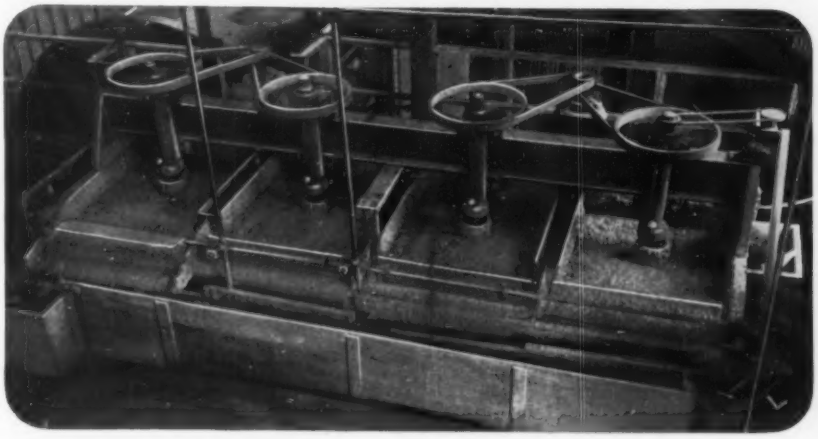


FIGURE 1 - APPARATUS

Fig. 1. Alkalimeter and an absorption train for making CO_2 determination

BENEFICIATION
AND
CONCENTRATION
PROBLEMS
Solved with Denver "Sub-A" Flotation



WHAT IS FLOTATION?

FLOTATION . . . a separation of minerals which takes place in water (or a solution) in which the solid particles are suspended, and results from the adhesion of some species of solids to gas bubbles which are generated or introduced in the pulp, and the simultaneous adhesion of other species of solids to the water in which they are suspended. Flotation of the solids adhering to the bubbles permits their removal from the pulp as a froth of different composition from the pulp. The specific gravity of the minerals is not the factor which effects the separation.

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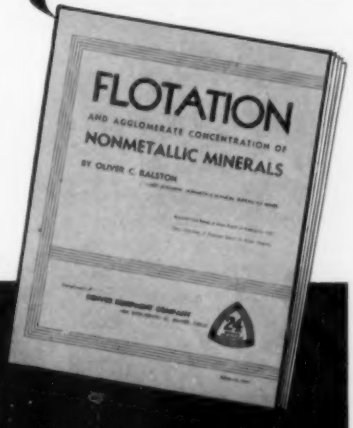

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The following special solutions are required for the determination:

HCl (about 2.4 normal)—add 370 ml. of concentrated HCl to 1700 ml. of distilled water.

NaOH (about 1.2 normal)—dissolve 96 grams of NaOH pellets in 2000 ml. of distilled water.

As described below in "Procedure Blank," 25 ml. of 2.4 normal HCl are used so that sufficient acid is present to readily dissolve the cement. After all the cement is dissolved, 25 ml. of 1.2 normal NaOH are added to nearly neutralize the excess acid present so that only a relatively small amount of 0.4 normal NaOH is required for the back titration. The normality of the resulting solution (25 ml. of 2.4 normal HCl plus 25 ml. of 1.2 normal NaOH) is determined and this solution is designated as the standard dissolving solution.

0.4N NaOH—Dissolve 32 grams of NaOH pellets in 2000 ml. of distilled water and standardize to 3 decimal places with standard acid.

Bromothymol Blue — Methyl Red Indicator—Dissolve 0.025 grams methyl red and 0.075 grams bromothymol blue in 100 ml. of alcohol. Approaching neutrality from the acid side, this indicator changes from red to yellow to blue-green at a pH of 6-7, thus allowing almost complete precipitation of R_2O_3 in the titration.

Principles Involved

The determination is based on the ratio between the acid requirement of the clinker content and the total acid requirement of the cement if it were composed of 100 percent clinker. To obtain this ratio the following derivation is made in order to differentiate between the acid required for solution of the clinker, and that required for the limestone:

Set—

A_t = ml. of standard dissolving solution required for the solution of 1 gram of the cement.

A_c = ml. of standard dissolving solution to dissolve the clinker component of the 1 gram sample.

A_l = ml. of standard dissolving solution to dissolve the limestone component of the 1 gram sample.

Then—

$$A_c = A_t - A_l \qquad (1)$$

And—

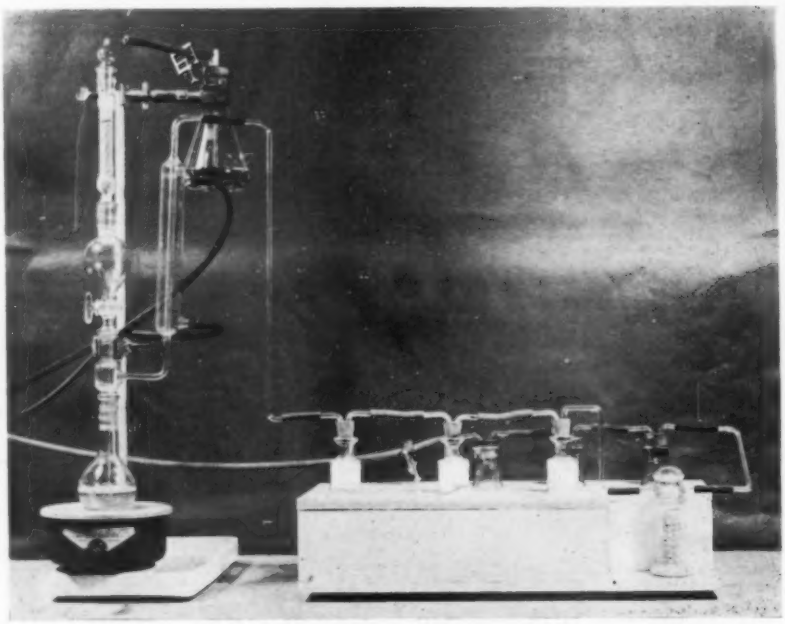

Fig. 2. Apparatus for determining CO_2 which has replaced original arrangement, shown in Fig. 1. U-tubes have been replaced by sample bottles in which the incoming glass tube goes to the bottom of the bottle. A flask containing sulphuric acid has been placed in the incoming air line as a trap to dry incoming air

$$A_t = B - \frac{nU}{N} \qquad (2)[2]$$

$$A_l = \frac{2 \times 1000G}{44.01\ N} = \frac{45.44G}{N} \qquad (3)[3]$$

in which—

B = total ml. of standard dissolving solution.

N = normality of the standard dissolving solution.

U = ml. of standard NaOH used in back titration of the sample.

n = normality of standard NaOH (0.4 normal).

G = net gain in weight in grams of the Ascarite weighing bottle = grams of CO_2 from 1 gram of cement.

Now—

$$\% \text{ Clinker} = \frac{100\ Ac}{M} \qquad (4)$$

in which—

M = ml. of standard dissolving solution required to dissolve 1 gram of pure clinker.

Combining equations 1, 2, 3, and 4—

$$\% \text{ Clinker} = 100\ \frac{BN - nU - 45.44G}{MN} \qquad (5)$$

But—

$$MN = 1000W \qquad (6)$$

in which—

W = moles of HCl required to dissolve 1 gram of pure clinker.

(Continued on page 94)

[2] The reactions taking place are as follows:

$SiO_2.H_2O + HCl$ (no reaction). (a)

$Fe_2O_3 + 6HCl = 3H_2O + 2FeCl_3 \longrightarrow 6NaOH = 2Fe(OH)_3 + 6NaCl$ (b)

$Al_2O_3 + 6HCl = 3H_2O + 2AlCl_3 \longrightarrow 6NaOH = 2Al(OH)_3 + 6NaCl$ (c)

$CaO + 2HCl = CaCl_2 + H_2O$ (d)

$MgO + 2HCl = MgCl_2 + H_2O$ (e)

$CaSO_4.2H_2O + HCl = Ca \cdots SO_4 \longrightarrow HCl + 2H_2O$ (f)

Since the R_2O_3 is precipitated as $R(OH)_3$ at the end point, only the CaO (less that in $CaSO_4.2H_2O$) and MgO contents (reactions d and e) control the acid requirement to the Bromethymol Blue-Methyl Red end point.

[3] The derivation of equation 3 is as follows:

G = moles CO_2 evolved from 1 gram of cement.

44.01 = moles $CaCO_3$ + $MgCO_3$ from limestone.

Similar to the case of the clinker (note 2), CaO_3 and $MgCO_3$ control the acid requirement of the limestone constituent.

Since—

$CaCO_3 + 2HCl = CaCl_2 + CO_2 + H_2O$ (g)

$MgCO_3 + 2HCl = MgCl_2 + CO_2 + H_2O$ (h)

Then—

$$2 \times \frac{G}{44.01} \times \frac{1000}{N} = \frac{45.44\ G}{N} = A_l \qquad (3)$$

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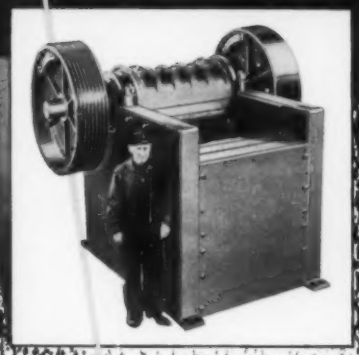

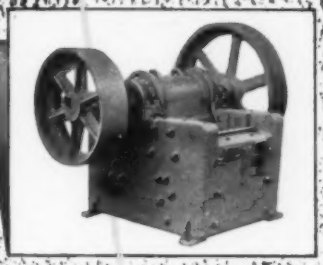

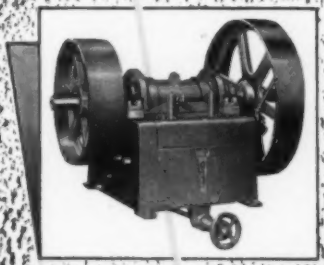

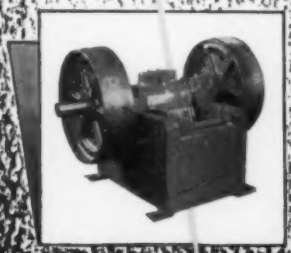

Welded Base
JAW CRUSHERS

Pioneer Jaw Crushers have been redesigned and new refinements and improvements have been added. The bases are constructed of steel plates — double walls — reinforced and welded. Larger shafts and bearings and longer jaws have been added in some models. All sizes are overhead eccentric type with manganese steel reversible jaw plates.

The James F. Lincoln Arc Welding Foundation

CERTIFICATE OF AWARD

Pioneer Engineering Works, Inc.

Pioneer Engineers receive award from James F. Lincoln Foundation for their paper on the design of welded base jaw crushers.

Here is how Pioneer box type double walls are constructed in the new series of jaw crushers.

PIONEER JAW CRUSHER SIZES: 3042 — 2436 — 2036 — 1536 — 1036 — 1524 — 1024 — 1020 — 1016

All sizes of Pioneer Jaw Crushers are equipped with SKF self-aligning bearings. The 1016 and 1020 are also available with bronze bearings.

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Practical Operation of Conveyor Belts

Part 7: Belt quality required depends upon service

By MELVIN C. DOW* and
HARVEY A. HARNDEN†

A veteran of 12 years' service. This belt has carried over 9,000,000 tons of stone

PROPER BELT QUALITY to be used on any conveyor is that one which will give the lowest unit cost. This may be obtained by purchasing the finest belt possible; it might be by buying the cheapest possible belt. The economical quality depends upon all the conditions affecting the belt, some of which are:

(a)—Frequency of loading
(b)—Whether wet or dry
(c)—Kind of material carried
(d)—Whether constant or intermittent use
(e)—Likelihood of abuse

*Chief engineer, New York Trap Rock Corp., Newburgh, N. Y.

†Formerly with Engineering Department, New York Trap Rock Corp.

In general, where a belt is of such a length and speed as to make a complete revolution in one minute or less, where there is slight possibility of serious damage, where the material is abrasive, or where conditions are such that pulleys are necessarily small, then the best quality belt will likely prove to be the most economical.

As an example of this statement, at one plant a new conveyor was installed several years ago in which half the length of the belt was the manufacturer's best quality with covers of from 3500-4000 p.s.i. tensile strength and with a friction between plies of 20-24 lb. per in. of width. The other half of the length was the same manufacturer's second best quality with covers of 2500-3000 p.s.i. tensile, and friction of 16-18 lb. In all other respects the belts were equal. The second grade belt lasted four seasons and carried 1,606,289 cu. yd. at a cost of 37c per 1000 cu. yd. or about 30c per 1000 tons. The best quality belt which originally cost 12½ percent more than the second grade lasted six seasons and carried 2,595,179 cu. yd. at a cost of 26c per

Well-designed conveyor in a loading out tunnel. Good housekeeping and maintenance is evident. This is a 48-in. belt, 7-ply, 28-oz., 3/16-in. top cover, 1/16-in. back. No. 2 grade with breaker strip. Belt has operated 12 seasons and has carried 10,000,000 tons

Old friend arrives . . . Thanks to you

When you're halfway around the world, trying to finish an important job, it's mighty pleasant to greet an old and very helpful friend you used to work with.

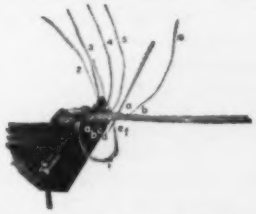
Back home, in scores of industries, the men now on palm-fringed shores learned an affectionate respect for the dependability of Wickwire Rope. Now when stout wire rope is more than ever a matter of life and death, the sight of a reel of *Wickwire* Rope brings double cheers.

These buddies of ours know that *you* need Wickwire Rope, too—to help in your speeded-up *production* of lots of things for them. So they're grateful when you make each length you now have last longer, so that more Wickwire Rope can be used to equip the Liberty Ships, and to send overseas.

But when you do need more of this friendly Wickwire Rope to help maintain your war-production pace, won't you please order it *without* reels, if lengths will permit, so that handier reels can be spared for the boys out there? Wickwire Spencer Steel Company, 500 Fifth Avenue, New York.

• • •

Wickwire Spencer was the first manufacturer in all New England to be awarded the Maritime M and Victory Fleet Flag for outstanding production accomplishments!



DO YOUR MEN KNOW HOW?

Our free book "Know Your Ropes" pictures the best ways to splice, attach sockets, etc. Also shows the right and wrong ways to use wire rope. In the hands of new men (and even old-timers) it can help you make your present wire rope last longer. Send for a free copy.

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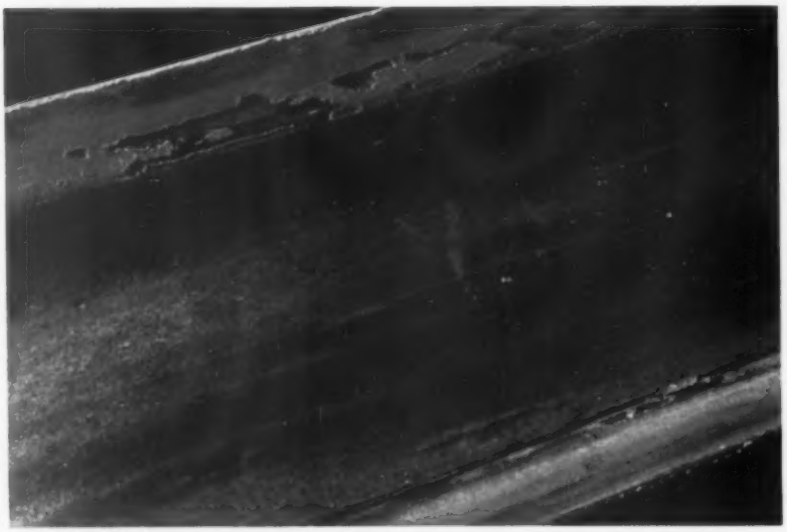

This belt is uniformly worn except at sides caused by bad skirt plates which will be the real cause for belt's ultimate failure

1000 cu. yd. or about 21c per 1000 tons.

On another conveyor it was found that one of the least economical belts was one of a certain manufacturer's best quality. Upon investigation the reason was found to be an accident caused by a sharp stone wedged in the discharge chute ripping a part of the cover from the belt. No fault can be found with the belt because of this condition, but where such accidents are at all likely the higher cost of the best grade is not justified. Unless an operator is able to make whatever improvements in the conditions that are necessary he cannot hope to get the full wear from a high quality belt.

Cheaper Belt for Infrequent Service

It is not unusual to find belts in some plants which are run only occasionally and yet which never seem to last as long as expected. Such belts fail after a few years regardless of the tonnage carried and the resulting high unit cost is puzzling. One particular belt which the writers have in mind failed after six years service during which time it had carried only 336,000 cu. yd. at the enormous cost of $4.40 per 1000 cu. yd. Since this cost was over four times that of similar belts it seems at first that this belt should have carried 1,500,000 cu. yd. before failure.

However, it was found that during the lifetime of the belt it had been operated only 440 hr. or an equivalent of 55 days. If this belt had been run for a longer time during its six-year life, it would have carried the expected 1,500,000 cu. yd., but because of the occasional use of the belt it would have had to last 24 years in order to deliver the expected capacity at the rate at which it was actually operated. The failure here was not due to wear but to a deterioration of the fabric caused by cover pitting under wet conditions. In such a case, unless the conditions causing the pitting could be eliminated, the cheapest possible belt was the logical belt to buy. However, since the original difficulty with this conveyor we have been able to get a belt made of a fabric which has been treated to resist mildew and apparently this construction will increase the life of future belts.

Except for severe cuts caused by improper skirt plates this belt is in excellent condition

Post-War Principles

NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION, Chicago, Ill., has issued a declaration of Post-War Principles. Ten basic principles are outlined.

These principles held that private enterprise or free-competition system has provided the highest standard of living in the world; that such a high standard cannot be maintained and improved unless the highest possible levels of employment and productivity are attained during the post-war period; that attaining and maintaining of these high levels of employment and productivity are the major responsibilities of industry; that industry's effective functioning under this responsibility is dependent upon the whole-hearted cooperation of labor and government; that this smooth cooperation between industry and labor and government is possible only if there is mutual understanding between labor and management; that government abandon excessive regulation and establish a tax program which will permit accumulation of reasonable reserve for new equipment and expansion; that this attainment of a high level of prosperity for every individual is the only feasible means of absorbing the huge debts of war within any reasonable period; that these goals are completely dependent upon (a) an ability to produce consistently more goods at a lower cost and (b) a wider and more complete dissemination of industrial and technical information; and that improved methods of industrial advertising and marketing can bring about the greatest reduction in distribution costs.

Cement Industry Declared Essential in California

CALIFORNIA cement producers' employes have been declared essential to the war effort in a recent ruling by H. R. Harnish, regional War Manpower Commission, Los Angeles, Calif. His statement reads, "The cement industry is unique here because more than 95 percent of its product goes into military installations—forts and airports all the way from Panama and Hawaii and to Alaska. Leaders of the industry have given pledges that a 48-hr. work week prevails and that no discriminations will be made in hiring because of race, creed or color.

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Saves so much time on the job . . .

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The Rip-Cord Closure can be opened easily without removing gloves . . . without tools . . . without tediously picking at wire or cord ties . . . without damaging the bag. Just a quick jerk on the rip cord and the bag is ready to empty.

Rip-Cord closing is efficient on your production line . . . brings economies on new bags . . . conserves storage space . . . increases the life of multi-trip bags as much as 50%.

Why not look into the possibilities of Rip-Cord economy and sales appeal for your product!

ASK THE MAN WHO OPENS THE BAG

If you want proof of the sales appeal and efficiency of the Rip-Cord Closure, ask the man who opens the bag. He'll tell you how a quick jerk opens the closure without damaging the fabric of the bag. This saves time and trouble . . . increases bag salvage. Rip-Cord closing may be used on any type of cloth cement bag.

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By E. D. POWERS*

Control and Collection of Industrial Dust

Part 5: Applications for the baffle type collectors

As THE NAME would indicate, the operation of the baffle type collector is based upon the principle of deflecting the gas stream from a straight line in a manner to separate the dust. The gas passing through this unit is deflected by a series of baffles which create dead air pockets, causing the dust particles to drop out of suspension. The baffles or vanes are usually arranged vertically with openings at the bottom through which the dust drops into a hopper or conveyor for removal.

Fig. 23 illustrates one such style collector. The air passing through the chambers in a horizontal path, is divided into a number of narrow vertical streams, by the deflector plates which extend from top to bottom of the unit. Each pair of baffle plates is joined together at about the center by a solid diaphragm and at the front and back by perforated concave plates which form a double chamber of still air.

The dust particles are thrown against these perforated plates, some passing through the openings into the still air settling chambers, where they drop into the receiver below. Some types of dust, when caused to impinge on the metal surfaces, will adhere. Most baffle type collectors are equipped with an electrical or mechanical vibrating mechanism which shakes the deflecting plates periodically, causing the dust which has accumulated on them to be dropped into the receiving hopper below the collector.

Fig. 24 shows a unit described as a venturi type. As the dust laden gas passes through the collector the portion closest to the dust trap plates carrying the greatest dust concentration is skimmed off. This is accomplished by the projecting side sheets which form vertical slots about ¼ in. wide through which the dust passes into the chambers. The bottoms of the traps are open and the dust settles into the storage bin below. The gas leaves through a narrow opening in the top of each trap. The operation is repeated as the gas passes through each row of traps, the dust burden decreasing in each successive step. It will be noted that there is no backflow of gas from the trap or chamber into the main body of the collector.

The collector shown in Fig. 25 is somewhat similar to the others in principle. Deflector plates are used to concentrate and direct the dust laden gas into the vertical traps. A mechanical rapping device is provided to shake down, into the storage bin, any dust which may adhere to the plate surfaces.

Baffle type collectors are not in as general use as most others, although where conditions are just right, they should be seriously considered. The resistance through this type unit is very low, sometimes as little as ½ in. W.G. In some cases they can be operated on stack draft, thereby eliminating cost of power. It is usually economical, however, only when there is an existing stack which can be utilized. When such is the case, the initial investment is reduced by the cost of the fan and a maintenance cost is avoided by the elimination of moving and wearing parts.

The recent trend toward the collection of dust of very small particle size has limited the use of the baffle type collector. Very careful consideration should be given to the problem before the baffle type collector is chosen as most fine dusts settle out

* Chief engineer, Welland Chemical Works, Ltd., Niagara Falls, Ont.

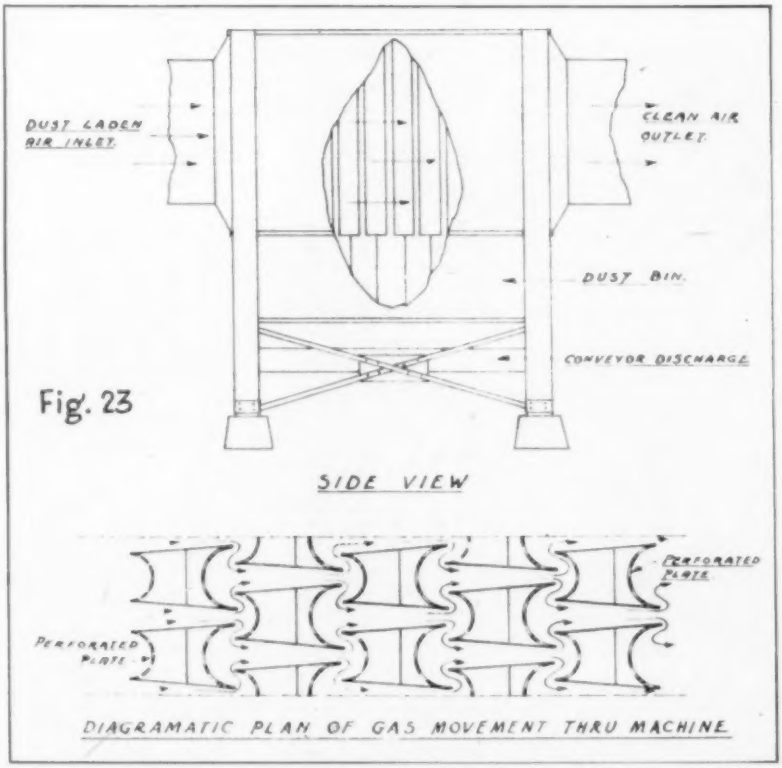
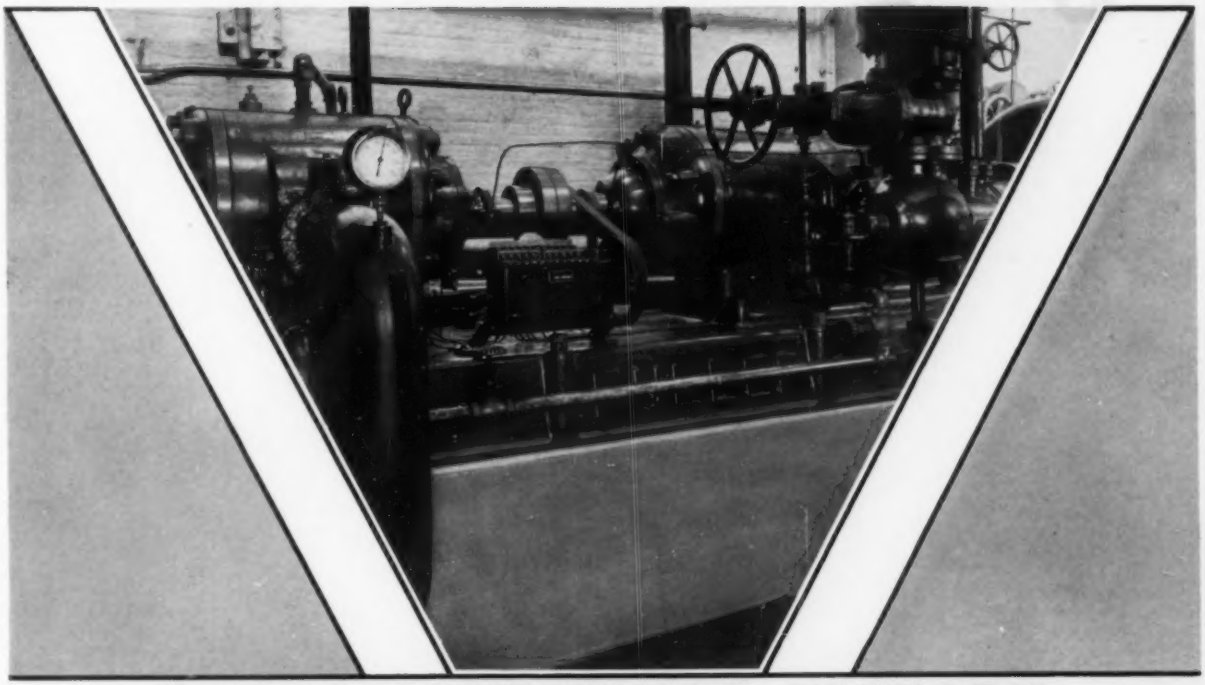


Fig. 23

Fig. 23: Baffle type dust collector in which air, passing through the chambers in a horizontal path, is divided into vertical streams by deflector plates



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One plant engineer in a war industry writes: "It is now approaching the third year of continuous operation for your two-stage compressor, (1800 C.F.M., 100-lb. pressure), during which time we are glad to report that the service load factor has been in the neighborhood of 99.9 per cent."

FULLER ROTARY COMPRESSORS

Another—"Your two-stage compressor, (100 C.F.M., 90-lb. pressure), has run 23 hours per day almost continuously for four years and has given no trouble." Not a cent was spent for repairs during these four years.

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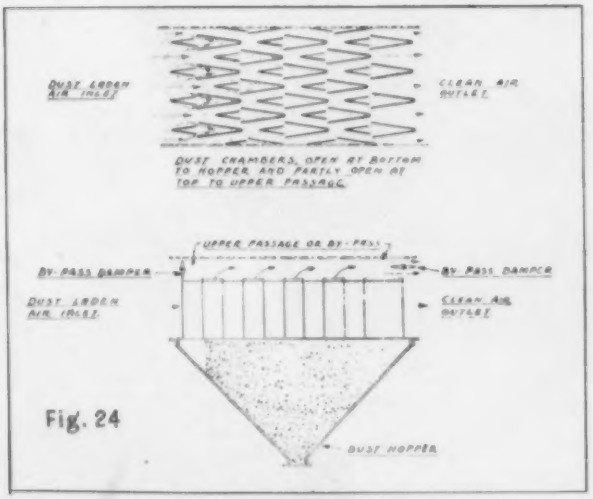

DUST LADEN AIR INLET
CLEAN AIR OUTLET
DUST CHAMBERS, OPEN AT BOTTOM TO HOPPER AND PARTLY OPEN AT TOP TO UPPER PASSAGE
UPPER PASSAGE OR BY-PASS
BY-PASS DAMPER
BY PASS DAMPER
DUST LADEN AIR INLET
CLEAN AIR OUTLET
DUST HOPPER
Fig. 24

Fig. 24: Venturi principle employed in baffle type dust collector. As the dust laden gas passes through collector the portion closest to the dust trap plates carrying heaviest dust is skimmed off

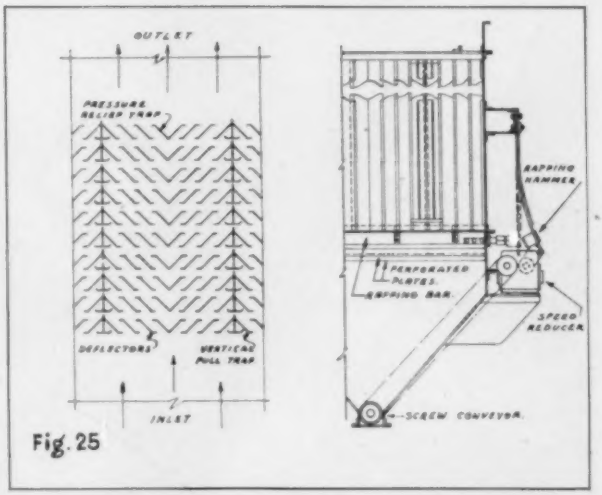


Fig. 25: This design is somewhat similar to the other baffle type collectors in principle. Deflector plates are used to concentrate and direct the dust laden gas into the vertical traps

of suspension very slowly. If at all possible, a small size unit should be operated under actual plant conditions and tests made to determine the collection efficiency. It should also be remembered that in most industrial plants, the dust particle sizes may vary over a considerable range with slightly different operating conditions. It is advisable to get a guarantee based on both an overall collection efficiency of a dust sample taken at as near normal operating conditions as possible, and a fractional efficiency guarantee based on particle size. The usual overall efficiency guarantee must necessarily be based upon one or a few test samples of the dust. Changes in operating conditions, which vary the proportions of the dust particle sizes will, of course, make such a guarantee useless.

Wet or sticky dust will often prevent the successful operation of the baffle type collector due to building up on the plate surfaces. If the gas contains moisture, such as is the case from dryer operations, the collector can usually be insulated to retain the temperature above the dew point.

Generally speaking, the efficiency of the baffle type collector will be between the low efficiency cyclones and the cloth filters and high efficiency cyclones.

Advantages of the Baffle Type Collectors

1. Low initial cost if they can be used with stack already in place.

2. Low power cost—since the baffle collector operates at a low resistance.

3. Can be used with relatively high gas temperatures.

Disadvantages of Baffle Type Collectors

1. Occupies more space than most other types.

2. Only in exceptional cases can it be considered as other than a low efficiency collector.

General Summary

The baffle type dust collector has a very definite place in the industrial field. Its application, however, should be given very careful consideration, particularly if field tests cannot be made over a reasonable length of time to determine the collection efficiency. If such a test can be made with a small commercial sized unit, the selection of a baffle type collector as against other types is then a matter of economics. The ideal application is where the collector can be operated off the draft of a stack already in place, and where either the dust particles are of such size that the collection efficiency will be high, or a medium high collection efficiency is satisfactory.

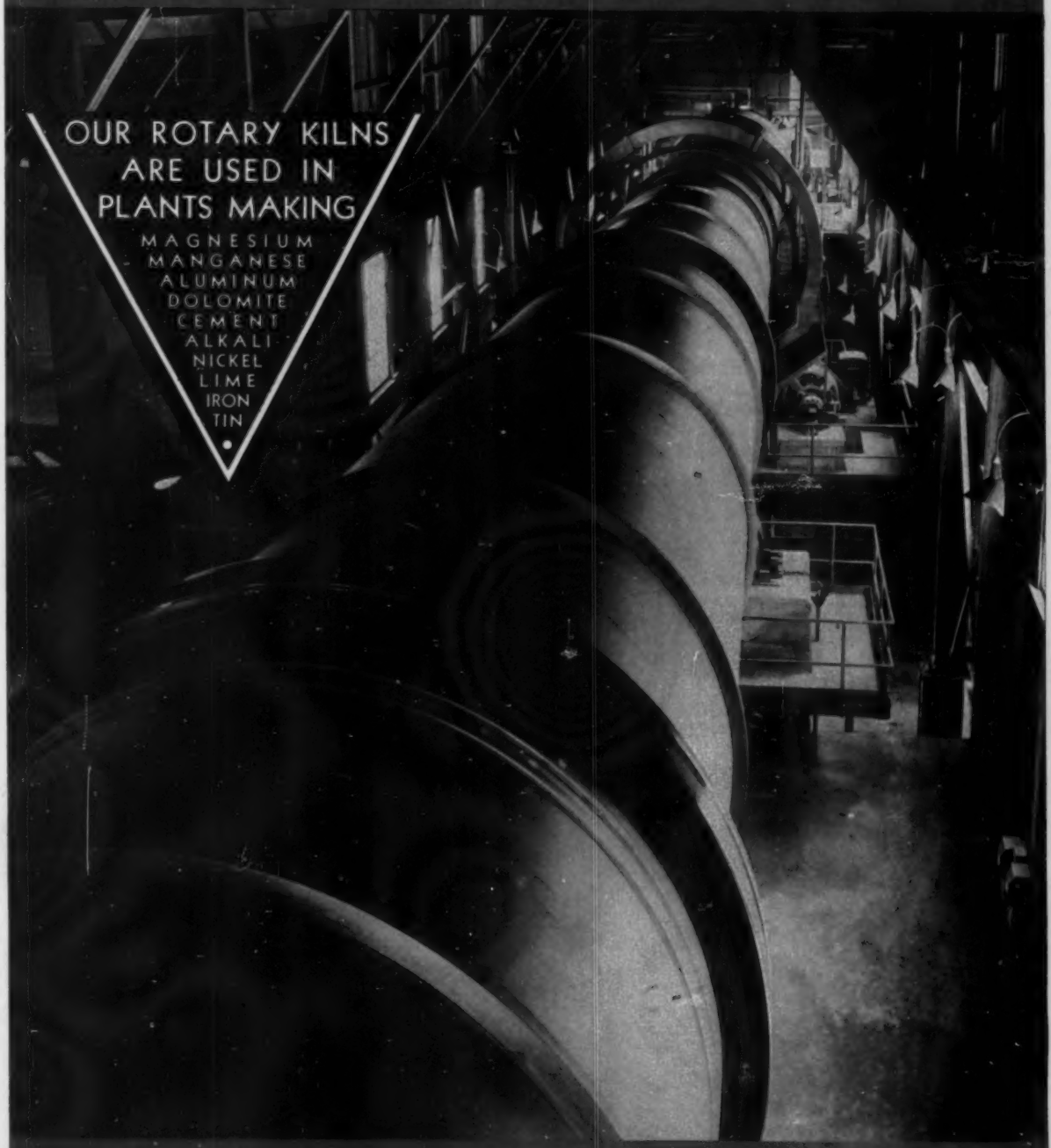
Paper Bag Priorities

EXECUTIVE SECRETARY V. P. AHEARN of the National Industrial Sand Association has sent a letter to the membership covering difficulties of obtaining operating supplies. He pointed out that the Mining Division of W.P.B. cannot issue a quota for paper bags. Mr. Bauman of the Division has been informed by Mr. Zeller, Chief, Paper and Textile Bag Unit, that the industrial sand industry is not required to endorse a preference rating on its purchase orders for paper bags. The same comment may be made with reference to explosives. In the matter of grinding media, if the supplier of nonmetallic grinding media insists on a preference rating, the dollar value quota for repair and maintenance should be used. If metallic grinding media is needed, this is classified Item No. 117 under carbon steel, Section 111A of the PD-400-C application form. Therefore metallic grinding media is included in the weight quota. If the weight quota or dollar value quota for repair and maintenance is inadequate in obtaining supplies of grinding media of both kinds, a supplementary application must be submitted to the Mining Division, explaining why additional quota allowances are needed.

Gypsum Exterior Board

CERTAIN-TEED PRODUCTS CORPORATION, Chicago, Ill., has announced two new products, a gypsum exterior board and a gypsum laminated roof decking. The exterior board is said to provide a means of speeding up wartime construction. One 2- x 10-ft. panel makes 20 sq. ft. of durable, weather-proof, rigid, fire-resistant wall in two minutes, and it sheaths, sides and insulates, all in one operation, according to the announcement. It is surfaced with an asphalt roofing material. The other product, a gypsum laminated roof decking, comes in panels with shiplap or tongue and groove edges.

ROTARY KILNS



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POWER

Motor Maintenance

Part 2: Regular lubrication schedule and proper lubricant are important factors

By O. F. VEA*

ONE OF THE MAJOR FEATURES of a maintenance program, from the standpoint of effect upon the general performance of a motor is proper lubrication.

The point has now been reached where the bearings of modern motors, whether sleeve, ball or roller, require only very infrequent attention. However, oiling and greasing of new motors is quite often entrusted to careless attendants who have been used to lubricating older designs, with housings less tight than on modern machines.

As a result, oil or grease is copiously and frequently applied to the outside as well as the inside of bearing housings. Some of the excess lubricant is carried into the machine and lodges on the windings, where it catches dirt and thereby hastens ultimate failure.

If the proper amount of a suitable lubricant is applied before starting, there should be no need to refill the housings for several months, even in dusty places.

Greasing Ball-bearing Motors

Only a high grade of grease, having the following general characteristics, should be used for ball-bearing lubrication: (1) Consistency a little stiffer than that of vaseline, maintained over the operating-temperature range; (2) melting point preferably over 150 deg. C.; (3) freedom from separation of oil and soap under operating and storage conditions; and (4) freedom from abrasive matter, acid and alkali.

In greasing a motor, care must be taken not to add too large a quantity of grease or it will cause too high an operating temperature with resulting expansion and leaking of the grease, especially with large bearings operated at slow speeds.

The following procedure is recommended for greasing ball-bearing motors equipped with a pressure-relief greasing system:

Make sure that no dirt gets into

Regular oiling program for small motors is essential

the bearing with the grease by wiping clean the pressure-gun fitting, bearing housing, and relief plug. Always remove the relief plug from the bottom of the bearing before using the grease gun. This prevents putting excessive pressure inside the bearing housing. Excessive pressure might rupture the bearing seals.

With a clean screw driver or similar tool, free the relief hole of any hardened grease, so that any excess grease will run freely from the bearing. With the motor running, add grease with a hand-operated pressure gun, until it begins to flow from the relief hold. This tends to purge the housing of old grease. If it might prove dangerous to lubricate the motor while it is running, follow the procedure with the motor at a standstill.

Allow the motor to run long enough after adding grease to permit the rotating parts of the bearing to expel all excess grease from the housing. This very important step prevents over-greasing the bearing. Finally, stop the motor and replace the relief plug tightly with a wrench.

A motor that is not equipped with the pressure-gun fitting and relief plug on the bearing housing cannot be greased by the procedures previously described.

Under average operating conditions, the grease with which the bearing housings of these motors were packed before leaving the factory is sufficient to last approximately one year. When the first year of service has elapsed, and once a year thereafter (or oftener if conditions warrant) the old grease should be removed and the bearings supplied with new grease.

To do this, disassemble the bearing housings and clean the inside of the housings and housing plates—or caps—and the bearings, with carbon tetrachloride. When thoroughly cleansed of old grease, reassemble all parts except the outer caps, or plates.

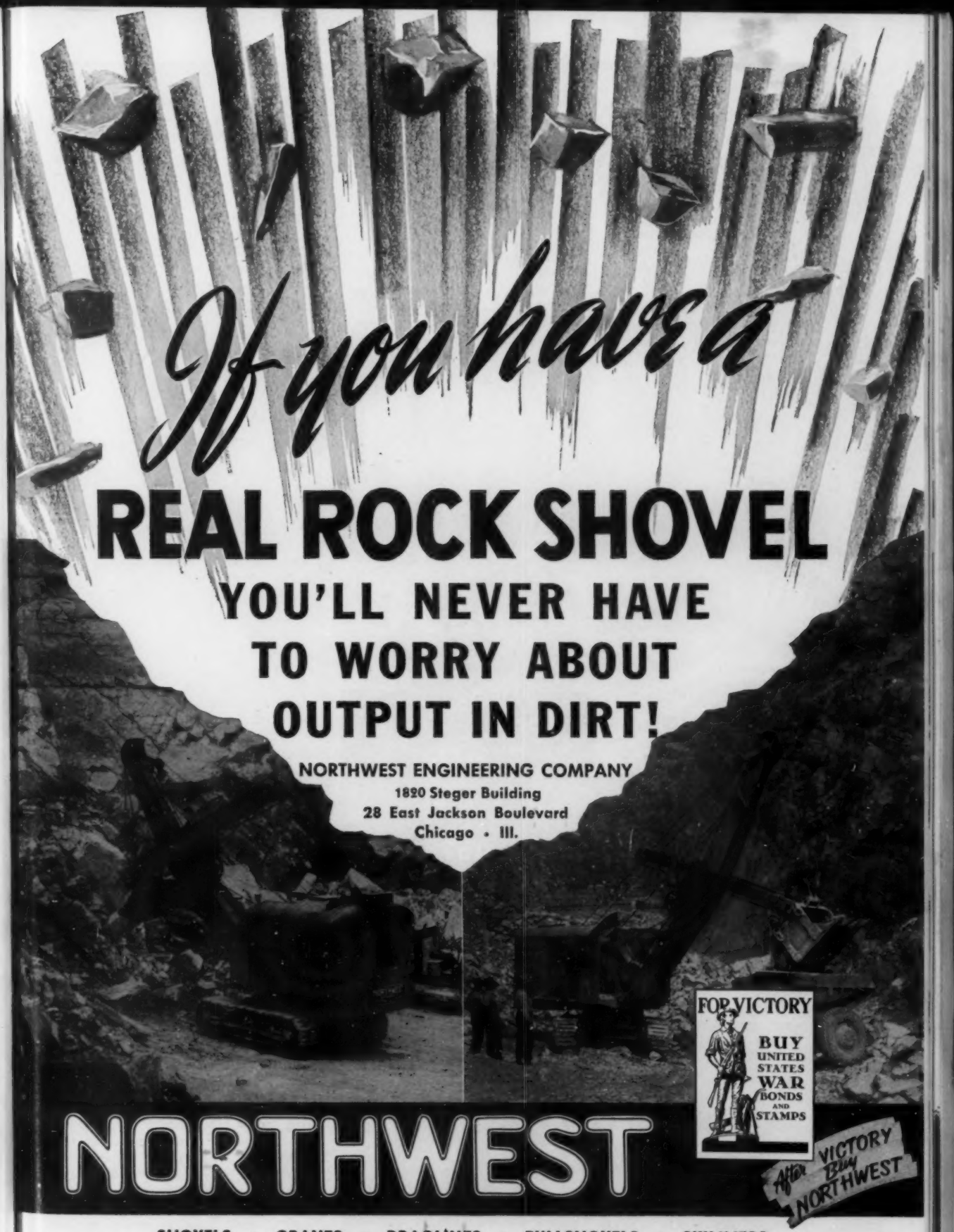
Apply new grease, either by hand or from a tube, over and between the balls. The amount of grease to be used varies with the type and frame size of the particular motor. The instruction sheet which accompanied the motor should be consulted for this information.

Addition of the correct amount of grease fills the bearing housings one-third to one-half full. More than the amount specified must not be used. When reassembling the motor, any V-grooves that are found in the housing lip should be refilled with grease—preferably a fibrous, high-

(Continued on page 76)

Greasing squirrel-cage induction motor. Pressure is applied until grease is expelled through relief hole

* Motor Division, General Electric Co.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temperature-sealing grease — which will act as an additional protective seal against the entrance of dirt or foreign particles.

The technique for greasing motors equipped with roller bearings is very similar to that used for ball bearings.

Specific instructions for the individual design should be followed, however, because more frequent greasing or slight changes in technique may sometimes be necessary.

Oiling Sleeve Bearings

The oil level in sleeve-bearing housings should be checked periodically with the motor stopped. If the motor is equipped with an oil-filler gauge, the gauge should be approximately three-quarters full at all times.

If the oil is dirty, drain it off by removing the drain plug, which is usually located in the bottom or side of the bearing housing. Then flush the bearing with clean oil until the outcoming oil is clean.

In fractional-horsepower motors, there may be no means of checking oil level, as all the oil may be held in the waste packing. In such cases, a good general rule for normal motor service is to add thirty to seventy drops of oil at the end of the first year and to re-oil at the end of each subsequent one-thousand hours of motor operation.

Most fractional-horsepower motors built today require lubrication about once a year. Small fan and agitator motors will often require more frequent lubrication, with three-month intervals between oilings.

Sleeve bearing housings are provided with liberal settling chambers into which dust, dirt, and oil sludge collect. The only cleaning necessary is to remove the drain plug and drain the oil, which will flush out most of the settled material with it.

Whenever the motor is disassembled for general cleaning, the bearing housing should be washed out with a solvent. Before being assembled, the bearing lining should be dried and the shaft covered with a film of oil.

Cleaning Ball Bearings

The pressure-relief method of greasing motors, described above, tends to purge the bearing housing of used grease. Complete cleaning of bearings, therefore, is required at infrequent intervals only. For a thorough and convenient flushing when the bearings are not disassembled, the following method is recommended:

Wipe clean the housing, pressure-gun, and relief fittings, and then remove both fittings. Every care should be taken to keep dirt out of the bearings. A bit of abrasive once in a bearing may not be removed even with the most thorough cleaning. Afterwards, it may become dislodged and get between the bearing surfaces with serious results.

With a clean screw driver or a similar tool, free the pressure-fitting hole in the top of the bearing housing of hardened grease. Also, free the relief-plug hole in the bottom of the housing from old grease to permit easy expulsion of the old grease during the cleaning process after the solvent is added.

Fill a syringe with grease solvent, such as carbon tetrachloride, and inject some of it into the bearing housing through the pressure-fitting hole, while the motor is running. As the grease becomes thinned by the solvent, it will drain out through the relief hole. Continue to add solvent until it drains out quite clear.

Replace the relief plug and inject solvent until it can be seen splashing

(Continued on page 78)

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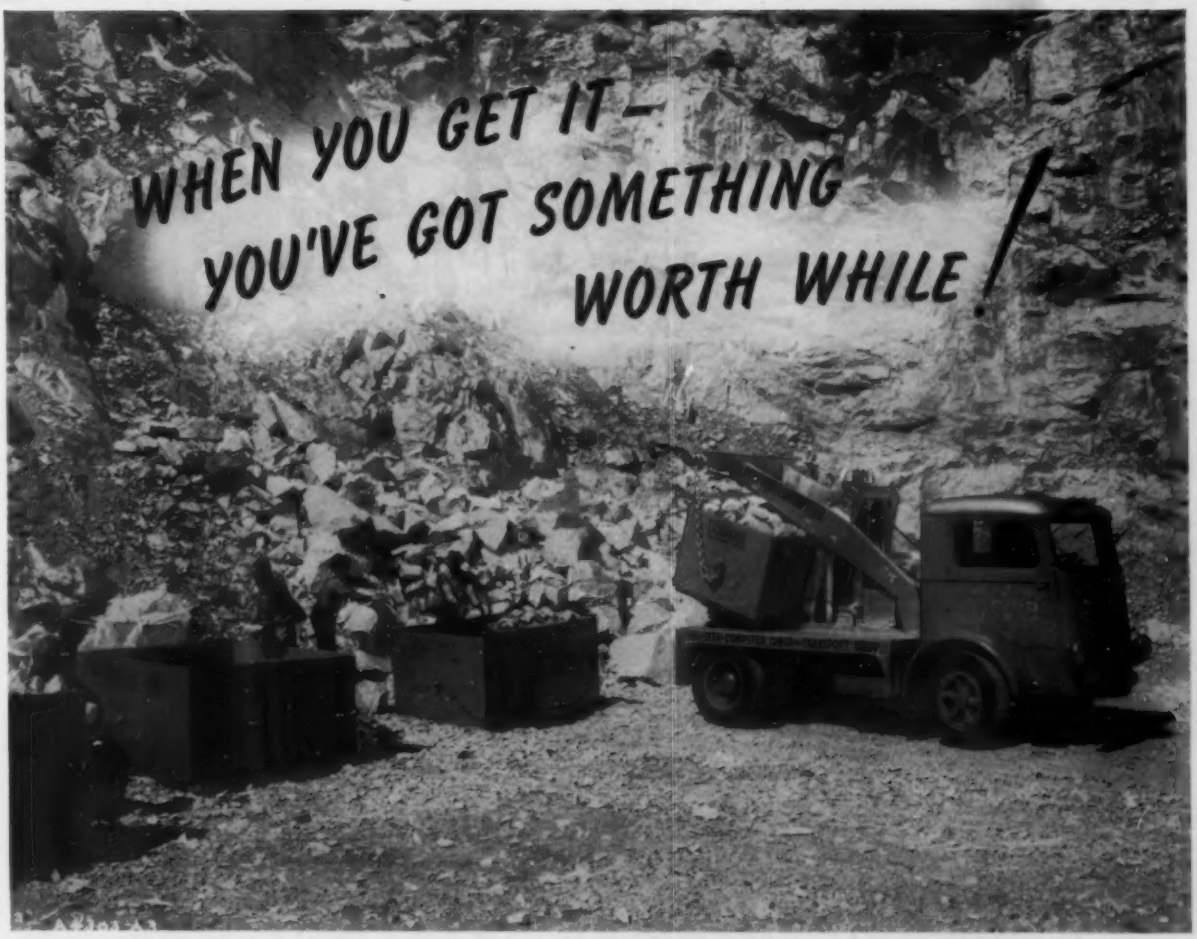

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There are dozens of rock quarries, lime, cement, sand and gravel plants that could eliminate most of their investment, operating and maintenance expense of trucks, and, in addition, save manpower, by modernizing their haulage system with the Dempster-Dumpster.

The Dempster-Dumpster system of material handling will serve either of two purposes for you now. First: if you need more production, install Dempster-Dumpster Hoisting Units on your present trucks, and with a sufficient number of detachable bodies to suit your requirements, you can quadruple your production. Second: if your production is now sufficient, eliminate three-fourths of your present trucks, install Dempster-Dumpster Hoisting Units on the remaining ones and, with detachable bodies to meet your requirements, you will equal your present production schedule, at amazing savings in costs, time and manpower.

Regardless of whether your material is light, heavy, fine or coarse, there's a Dempster-Dumpster built to handle it. And when you get a Dempster-Dumpster, you've got something worth while!

Although reasonably prompt deliveries may be made, we suggest that you investigate the Dempster-Dumpster system of material handling at once, even though you may not contemplate using it now.

Write for completely illustrated manual showing dozens of different types of material handling problems that have been met with the Dempster-Dumpster System. Our engineers will be glad to cooperate with you. Dempster Brothers, Inc., 363 Springdale Addn., Knoxville, Tennessee.

DEMPSTER DUMPSTER

There is a Dempster-Dumpster Built for Every Material Handling Job

Lubricating Motors

(Continued from page 76)

in the filling hole. Allow the solvent to churn for a few minutes, and then remove the relief plug and drain off the solvent. Repeat the churning operation until the solvent runs clean.

When using carbon tetrachloride for flushing, replace the relief plug and inject a small amount of light lubricating oil. Allow it to churn for a minute or two before draining off. This will flush out the solvent. To complete the job, grease the bearing, using method previously described.

This method permits the cleaning of all standard motors operating at an angle not exceeding 15 deg. from the horizontal (except totally enclosed, fan-cooled motors). For these motors, the bearing at the pulley end may be flushed as described. To clean the fan-end bearing, first remove the fan cover and fan in order to make accessible the drain plug at the bottom of the housing.

Uses for Vermiculite

PROGRESS is being made in finding uses for vermiculite raw material too small to be used after processing as loose house fill (3- to 14-mesh). A good deal has been done in developing mixtures with fireclay and bentonite for special refractories. Heat-and-sound-insulating plasters using vermiculite are another development.

According to the Bureau of Mines, the Mikolite Co., Kansas City, Kan., has some new vermiculite products. One is "mikolite" (expanded vermiculite), an extender for aluminum paints which it is claimed makes them work better than straight aluminum paint and have 25 percent greater coverage per gallon. Vermiculite for this purpose is only 2/100,000 in. in size. Other uses of this fine powder (98 percent minus 325-mesh) are as a coolant and lubricating agent in automobiles. It is said to have lubricating properties somewhat similar to those of graphite and to be non-abrasive. This mikolite disperses readily in lubricating oil and is offered by the company as a means of taking up uneven wear in automobile engines, increasing compression and reducing oil consumption by filling the pores of cylinder walls, pistons, etc.

Cement Plants Resume Operations

UNIVERSAL ATLAS CEMENT CO., Hudson, N. Y., plant resumed operations April 1 with three kilns in service. The plant had been inactive for several months.

SOUTH DAKOTA'S STATE CEMENT PLANT started up recently after a two-month shutdown to make repairs. The plant had been in continuous operation for 13 months.

WASHINGTON-IDAHO LIME PRODUCTS CO., Orofino, Idaho, has started clinker grinding operations and expects to resume quarry operations when the road to the quarry, closed by slides, has been cleared. All cement is going to war projects.

ALPHA PORTLAND CEMENT CO., Manheim, W. Va., plant went into production on a reduced schedule on May 3, according to a statement issued by Superintendent W. L. Mathes. Operations of the plant were suspended last December.

Court Restricts Blasting

BIG BEND QUARRY CO., Maplewood, Mo., has been restrained by court order from using more than 100 lb. of dynamite in a single charge and also from blasting more than once every three minutes. The order was issued by Circuit Judge John A. Witthaus, Clayton, Mo. The order is in accordance with terms agreed upon by Prosecuting Attorney Stanley Wallach and attorneys for the company.

A rightful claim for PLYMOUTH Gasoline Locomotives over the years . . . most important now with production requirements at an all-time high. Plymouth performance is a practical and efficient method of solving stepped-up transportation schedules of guaranteeing a peak flow of materials from whistle to whistle.

Plymouth gasoline or Diesel powered locomotives are tough . . . constructed to take the severe punishment necessary to meet wartime programs without faltering. Plymouth provides fast, low cost and efficient industrial transportation. Available in accordance with the war production planning of our government.

PLYMOUTH GASOLINE and DIESEL LOCOMOTIVES
PLYMOUTH LOCOMOTIVE WORKS
Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

Ready Mix PRODUCTION

CONSERCO Ready Mix Trucks are ready for duty. CONSERCO makes it profitable for producers to handle contracts that would otherwise have been out of their reach.

EXPAND OR REDUCE PRODUCTION TO MEET DEMANDS

WITHOUT INVESTMENT OR OVERHEAD

The CONSERCO "7 Point Plan" makes it possible for you to increase concrete production overnight without capital investment, and no overhead to carry when extra production is no longer needed.

The
CONSERCO "7 Point Plan"
for
Complete Ready Mix Concrete Truck Rental Service

1. Mixer and truck complete, 3, 4 or 5 yds.
2. Experienced Driver.
3. Gasoline
4. Oil.
5. Maintenance of truck and mixer
6. Insurance
7. Truck delivered to the job.

NATIONWIDE SERVICE OPERATING 61 UNITS

Inquire today for complete information about the CONSERCO Plan, including rates

CONSERCO, INC., 1600 South Capitol St., WASHINGTON, D. C.

Phone: Atlantic 9055 **Long Distance 1200**

What the New Man Needs to Know About Safety

Presented by A. J. R. Curtis, Secretary, Committee on Accident Prevention and Insurance, Portland Cement Association at PCA Regional Safety Meeting, Birmingham, Ala.

We were all greatly impressed with the fact that accidents to new workers in the cement mill organizations are increasing at an amazing rate. The proportion of cement plant accidents suffered by men at work less than a year was six times as great in 1942 as in 1938.

Men of the cement industry who have wrestled with mill and quarry accidents for years realize that it requires the whole-hearted cooperation and continucus efforts of every individual in a given organization to make a good safety record. It takes only one man to break it. Furthermore, the one man need have but one accident and that accident may result from just one lapse or one careless moment. In 30 plants out of some 150 in P.C.A. membership, 20 percent, a single accident spoiled an otherwise perfect plant record for the year 1942.

The supervisors in charge of the various departments can and do instruct the new man on many points but new situations are coming up constantly and the first warning needs to be repeated often. This leads me to the belief that the experienced men of the department, particularly those closest to the new man, can be of the greatest help in developing the new man as a safe worker.

Many of the older men, who have tried it, will probably agree that it is not possible to anticipate and instruct the new man on everything that might happen but there are certain known hazards and conditions that he needs to be told about. I am thinking particularly about telling and showing the new man how to handle himself, then following up with continued training until safe personal habits have been definitely established.

Perhaps a good approach to the matter in almost any plant would be to (1) prepare a list of items that should be explained to newcomers and (2) discuss them in a meeting of the department heads. (3) On the basis of this discussion, prepare a corrected list and (4) distribute copies of it to the department heads for use in discussing these items with their own groups. Of course all of the items on such a list would not necessarily interest all departments. (5) Appeal to the experienced workers in each group to assist in spreading the information to the new men in order to better equip them to make a good start and maintain a clear safety record. (6) All of these steps require frequent repetition.

Safety Suggestions

Here are some of the points that new men should know about and be "sold" on:

1. How to lift. Every year many plant records are marred by strained backs. That is all unnecessary.

2. Under what conditions goggles should be worn. Chips and dust in eyes cost cement plants time enough to build many tanks or bombers.

3. Wearing of safety shoes. All cementmen have to be on their feet a lot and even a small foot accident may be a real calamity.

4. How to get on and off of trucks and railroad cars.

(Continued on page 82)

Why NAYLOR Does VENTILATING Jobs No Other Light-Weight Pipe Can Handle

No other light-weight pipe can match Naylor in push-pull ventilating service. Naylor's exclusive Lockseam Spiralweld creates a reinforcing truss which provides additional collapse strength and permits use of lighter gauge material than possible with any other pipe. This structure provides advantages like those listed here to make Naylor the preferred pipe for ventilating service.

Write for Naylor Catalog.

NAYLOR PLUS PERFORMANCE

Always accurate in diameter.
Concentric ends match correctly.
Easier to install.
Holds true cylindrical form.
Stays tight and leakproof.
High salvage value.
Light weight saves steel.
Cuts maintenance costs.
Saves money.
Sizes: 4" to 30" in diameter—all types of fittings, connections and fabrication.

Naylor
LOCKSEAM SPIRALWELD PIPE

NAYLOR PIPE COMPANY
1237 East 92nd Street
Chicago, Illinois

★ ENGINEERING DATA ★

SPECIFICATIONS—HARDINGE BALL MILL

Size Mill	Weight of Mill	Weight of Lining	Weight of Balls Min.	Weight of Balls Max.	R.P.M. Mill Min.	R.P.M. Mill Max.	Horsepower To Run Min.	Horsepower To Run Max.	Horsepower Of Motor Min	Horsepower Of Motor Max.	CAPACITY IN TONS PER 24 HOURS 1¼" to 10 Mesh	¾" to 48 Mesh	½" to 100 Mesh	¼" to 98% —200 Mesh	¼" to 98% —325 Mesh
2'x8'	1150		500	650	35.2	46	1.5	2	1.5	2	7	3.5	2.5	1.5	1
3'x8'	2700	1400	1000	1300	30.4	39.8	5	6	5	7.5	21	10	8	5	3
4½'x16'	7000	5200	3600	4600	25.2	33	15	18	15	20	65	33	23	15	9
5'x22'	10200	8000	6500	8300	23.2	30.4	32	37	30	40	140	70	49	31	19
6'x22'	15300	10000	10500	13500	21.2	27.7	52	60	50	60	232	105	80	52	31
7'x30'	20000	15400	20000	26000	19.4	25.4	92	115	100	125	465	225	155	102	61
8'x48'	29000	23000	34000	43500	18.2	23.8	163	200	175	200	820	394	274	179	108
9'x48'	38000	28000	45000	58000	17.3	22.4	260	310	250	300	1290	630	435	285	172
10'x48'	39800	30000	52500	67500	16.2	21.2	300	400	300	400	1690	810	560	367	221
12'x48'	66000	45000	83000	106000	14.7	19.2	500	600	500	600	2550	1210	840	850	330
12'x120'	80000	70000	152000	196000	14.7	19.2	1040	1160	1100	1200	4900	2340	1630	1060	640

(1) Capacities given are for grinding material wet of average grindability. For hard materials the capacities should be reduced, and for softer materials—increased.
(2) Dry grinding capacities are 80 to 90% of the above capacities. (3) Normal operating ball charges for mill with air classifiers are 5 to 10% below minimum listed.

REPRESENTATIVE PERFORMANCES OF RUGGLES-COLES DRYERS

TYPE AND SIZE	XA-10	XA-14	XA-14	XA-18	XB-8	XB-14	XF-12	XF-14	XH-8	XW-2
Material	Zinc Slimes	Coal	Stone	Ore	Clay	Clay	Asbestos Rock	Stone	Flotation Concentrates	Ammonium Sulphate
Moisture in material fed, %	43	11.8	8.9	14.2	27.3	19.8	7.93	5.2	12.5	1.75
Moisture in material discharged, %	22	1.1	0.7	4.7	0.7	1.3	0.66	0.3	3.2	0.11
Temperature of outside air, deg. F.	70	65	75	40	50	70	75	47	38	48
Temperature of fan exhaust, deg. F.	140	168	145	165	226	221	170	390	355	107
Temperature of material fed, deg. F.	60	63	70	48	58	64	70	50	41	72
Temperature of material discharged, deg. F.	210	245	280	220	237	248	160	360	238	142
Type of fuel or heating medium	Oil	Coal	Coal	Oil	Coal	Oil	Oil	Coal	Oil	Steam
Calorific value of fuel, b.t.u. per lb. or gal.	151,000	13,900	14,000	144,000	12,405	138,000	140,000	14,000	140,000	940
Fuel consumed per hour, lbs. or gals.	40.2	715	940	143	280	65.8	260	1,260	24.7	290
Horsepower required for dryer drum	11	48	53	73	12	54	50	56	10.5	6
Horsepower required for dryer fan or fans	8	9	9.5	16	4.5	16	11	11	3.5	3.5
Capacity, dried material per hour, lbs.	11,000	46,000	76,400	98,500	3,915	18,500	160,000	104,000	13,100	5,300
Water evaporated per hour	4,080	5,580	7,096	10,906	1,414	4,267	12,800	5,375	1,392	90
Water evaporated per lb. or gal. of fuel	102	7.8	7.55	76.2	5.05	64.8	49.3	4.27	56.3	0.31
Fuel per ton (2,000 lbs.) of dried material, pounds or gallons	7.30	31.1	24.6	2.91	142	7.1	3.26	24.3	3.77	109

HARDINGE ROD MILL DATA

Size of Mill	WEIGHT IN POUNDS Mill	Lining	Rod Charge	R.P.M. Mill Min.	R.P.M. Mill Max.	HORSEPOWER To Run Min.	To Run Max.	Motor Min.	Motor Max.	CAPACITY Tons/24 Hr. Wet Grinding ¾" to 20 Mesh	Tons/hr. Dry Grinding ¾" to 10 Mesh
2'x4'	5000	3000	1700	32	43	5	6	5	7½	27	1
3'x6'	10000	10000	6000	25	34	15	18	15	20	80	3
4'x8'	16000	20000	14000	21	29	33	40	35	40	180	6
5'x10'	32000	31000	27000	18	25	60	80	75	100	350	12
6'x10'	42000	41000	40000	16	19	90	115	100	125	510	18
7'x12'	58000	57000	68000	14	17	150	185	150	200	830	29
8'x12'	71000	70000	90000	12	15	190	240	200	250	1070	38
9'x12'	87000	85000	115000	11	13.5	240	300	250	300	1340	47
10'x16'	115000	113000	195000	10	12.5	390	490	400	500	2200	77

HARDINGE COUNTER-CURRENT CLASSIFIER DATA—WET CLASSIFICATION

Size Class.	Material	Object	Fineness Mesh Overflow	Fineness Mesh Oversize	Fineness Mesh Feed	CAPACITY Overflow T/24 hr. (dry)	CAPACITY Overflow T/hr. (dry)	CAPACITY Oversize T/hr. (dry)	CAPACITY Feed T/hr. (dry)	DILUTION Overflow % solids	DILUTION Oversize % solids	DILUTION Feed % solids	Sp.g. of ore	R.P.M. Classifier	HP Req.
18"x4'	Limestone	Closed circuit with 2'x8" H. Mill	tr.+200 94.7% —325	4.8%-325	.5%+48 28.4% —325	1.2	.05	.2	.25	11	72	55	2.6	2	.1
3'x8'	Quartz Ore Gold	Closed Circuit with 5'x36" H. Mill	tr.+65 64.4% —200	8.5%-200	19.2% —200	50	2.1				84.2	72	2.6	4	.7
5'x12'	Quartz Gold Ore	Closed Circuit with 7'x36" H. Mill	1.6%+100 80%-200	78.4% +100M 7.3%-200	10%+10 18.4% —200	192	8			30	81	78	2.7	2	1.5
6'x14'	Quartz and Porphyry Ore	Pr. Classification Closed Circuit with 8'x30" H. Mill	3.5%+28	52.5%-28	2.5%+6	520	22	52	74	45	82	74	2.7	2.3	4
8'x20'	Lead Zinc ore in limestone	6'x12' Rod Mill to class. in c. c. with 6'x8' B. Mill	6.6%+48 39.8% —200	29.4%+48 8.2%-200	—10 Mesh	1040	43			51	85		3.9	1.5	8

HARDINGE THICKENER DATA

Number and Size Thickener	Material	Object	Mesh Fineness Feed	Feed rate Solution T/24 hrs.	Feed rate Dry solids T/24 hrs.	% solids in feed	% solids Underflow	Settl'g Rt. Sq. Ft. T/24 hrs.
1—20'x8'	Zinc, Copper, Lead Ore	To thicken Classifier overflow for flotation feed	99.5% —200	400	100	20	40	3.1
1—24'x8' 4—20'x8'	Quartz Ore	Primary thickening and C. C. D. washing Cyanide Treatment	5% +65	180	60	25	58	5
1—40'x12'	Float. Mill concentrates	Dewatering		1050	350	25	56	4
1—60'x10'	Copper ore Pyrite and Chalcopyrite concentr.	Dewatering and Thickening	100	1680	560	25	75	5

HARDINGE
COMPANY, INCORPORATED - YORK, PENNSYLVANIA
NEW YORK, CHICAGO, SAN FRANCISCO, TORONTO

Safety Suggestions

(Continued from page 80)

5. How to go up and down ladders and steep stairways, also how to handle and place ladders.

6. How to handle one's self and what kind of clothes to wear around moving machinery. Tell the new man about our four horsemen and impress him with the fact that No. 1 Horseman, Moving Machinery, is alone accountable for almost half of our accident severity.

7. Dangers of standing under shovel buckets and suspended loads of any kind.

8. What to look out for around electric lines and apparatus.

9. Railroad hazards.

10. Proper use of wrenches and other tools.

11. Avoiding falls.

12. Avoiding horseplay.

13. Reporting immediately for first aid.

14. Avoiding heat prostration.

15. Use of fire fighting apparatus.

The above list although incomplete, will serve to illustrate very well my plea that you all do something immediate and definite about getting across to every new man who comes to work among you, these and other personal conduct suggestions that are necessary if he is to become a safe worker.

New Employes Need Safety Training

By R. A. DITTMAR

Supt., Universal Atlas Cement Co., Hudson, N. Y.

IN OUR INDUSTRY, we have been working on an advanced safety program for a good many years and it is startling at times, in making contacts with new men, to see what little safety training some of them had before they came into the cement industry. We have just completed the Portland Cement Association's last series of advanced discussional meetings and I do not hesitate to recommend the procedure outlined under these subjects for introducing new men to the safety program.

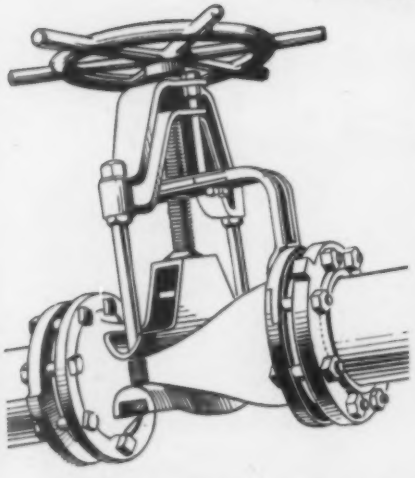
One outstanding thought is, that we must consider the new man knows nothing about safety and that an old hand in one department, transferred to another department, should be classed in the category of a new man by his new foreman. The new man, therefore, must receive special instructions from the foreman and from the men he is working with on the hazards incident to his environment, and these instructions must, of course, be repeated over and over be carefully checked.

As to the first lessons in safety, this subject should be introduced by the employing agent, or safety supervisor, and followed up by the new man's foreman. At Hudson, M. J. Degnan, our safety supervisor, brings all men into my office to see me before they go to work. It is my first desire to extend a friendly greeting and to have the new man understand that he is needed in the organization. I ask every new man to work carefully and advise him of the fact that safety is stressed and always comes first at our plant. In our discussional meetings we have gone over and over the procedure for receiving new men—our first efforts being to have them become thoroughly acquainted with the men around them and comfortable in their new surroundings in an effort to eliminate such distractions and to make them feel at home on the job.

Dolomite for Magnesium

DOW MAGNESIUM CORPORATION is calcining dolomite rock from Ohio at one of its Michigan plants for the production of dolomitic lime which is used in production of magnesium.

MASSCO-GRIGSBY
Pinch VALVES



for ABRASIVE and CORROSIVE PULPS and LIQUIDS

NO METAL CONTACTS PULP OR LIQUID

Useful for solutions which are highly corrosive or which crystallize at normal temperatures and must be handled at up to 300°F; or for mixtures of solutions or solids which are both corrosive and abrasive.

Recommended for transfer lines, controlling flow in plant, delivering product to storage or cars or for handling fine dry materials. Valve shuts tight on solid particles.

These valves resist wear **more** than metallic parts of gate or plug valves. No packing glands. Freezing temperatures will not destroy sleeve. Easy to operate.

1", 2" and 3" for continuous pressures to 100 lbs.; 4", 6", 8", 10" and 12", up to 150 lbs. Send for illustrated folder.

MASSCO Jr. Rock Bit Grinder

Other Products — MARCY Ball, Rod and Tube Mills; Genuine WILFLEY Concentrating Tables; MASSCO-McCARTHY Hot Millers; Rock Bit Grinders; Belt Feeders; Density Controllers.

DENVER
SALT LAKE CITY
EL PASO
NEW YORK CITY

The Mine & Smelter Supply Co.

CANADIAN VICKERS, LTD.
MONTREAL
W. R. JUDSON
SANTIAGO, LIMA

15-Ton Trucks

(Continued from page 47)

channel and plate construction and bridges the gap over the point of discharge into a 48-in. Allis-Chalmers apron feeder that regulates the flow of stone into a 48- x 60-in. Traylor jaw crusher. By having the runway, an incoming truck passes over the point of discharge and stops. The runway is then raised by a pneumatic lifting device, being pivoted at the opposite end, and the truck dumps its stone and proceeds forward on its return trip to the quarry. Without it, the trucks would have had to back up to unload or the building would have to be widened and side-dump truck bodies used.

When shale is needed in the raw material mix, it is added in the truck hauling clay, at the crusher house. Bulldozing and grading equipment similar to that in service at the Wampum plant maintain the quarry floor and road to the crushing plant in shape to insure long tire life.

Finding New Uses for Silica Gel

CULLIGAN ZEOLITE CO., San Bernardino, Calif., has been extremely busy producing silica gel in a new plant to meet many pressing wartime and civilian requirements. Silica gel, made from sodium silicate and acid, has been put to many new uses. It is used to remove moisture and impurities from many gases. Another important use is in the manufacture of aviation gasoline, in the production of synthetic rubber, in the dehydration of refrigerators and in refrigeration equipment. It also prevents formation of rust on metals by the removal of moisture.

Cut Bureau of Mines Funds

THE DEPARTMENT OF INTERIOR has accepted a voluntary cut of 60 percent in its budget for the coming year. The Bureau of Mines will have a budget of $8,640,225, a decrease of $15,312,915, according to newspaper reports.

Pavement Yardage

AWARDS of concrete pavement for April, 1943, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During April, 1943
Roads	768,197
Streets and Alleys	840,005
Airports	2,239,559
Total	3,847,761

Minutes Instead of Hours for Replacing Dipper Lip

The term "renewable" is one of variable meaning, notably at the time when a dipper lip or front has to be changed.

The Amsco all-manganese steel *rivetless* renewable lip dipper (U. S. Patent No. 1,945,064) meets the present necessity of saving operating time and manpower.

All that need be done in removing a worn Amsco rivetless lip is to loosen the "U"-bolts between lip and back, remove four forged split keys between lip and front, and the lip is *off*. Putting on the new lip is just as quick and simple. No rivets or special tools are used, and yet the lip is fastened as securely to the body as if riveted. And the shovel down-time is a matter of minutes, instead of hours — or days.

The Amsco renewable lip feature largely reduces the delay and expense involved in removing worn riveted fronts and riveting on new ones because the lower front casting normally outlasts several lips and lip changes can be made in the field—no need for hauling the dipper to the shop for repairs.

The Amsco dipper takes a bigger bite and a greater heap load because of the "rolling-in" action of the extended lip contour with its sharp full-sweep sides, the finger-like teeth, and the smooth, unobstructed body interior. These features result in maximum speed of shovel operation. The slight outward taper toward the door eliminates arching or binding of material and the positive latching, clear-swinging door insures fast, clean dumping.

The Amsco renewable lip dipper is a "must" for these times of limited manpower.

Ask for Bulletin 641-D on Amsco dippers.

Renewable lip dipper; showing smooth interior and lip and teeth shaped for smooth, fast cutting.

Above: Showing detail of "U" bolts that hold lip to back casting. Left: Lip removed to show ease of replacement.

Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, IND.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

AMERICAN Brake Shoe COMPANY

Speed Up Air Craft Plant with Ready Mix Concrete

Walt Keeler Concrete Co., Wichita, Kans., sets up batch plant near job to expedite concrete deliveries

Walt Keeler

When the Boeing Airplane Co. built its new plant, the job of furnishing concrete for the construction was turned over to the Walt Keeler Concrete Co., Wichita, Kans. Walt Keeler already had established a reputation for getting things done, and when the big contracts were ready to sign he got the air craft plant job.

He had been geared up for the large construction jobs through experience gained in several defense housing jobs, and prior to his ready mixed concrete venture had been in the concrete construction business. Many thousand square feet of walks and drives in the city of Wichita bore the stamp of his company.

Batching plant capacity is normally 75 cu. yd. per hour. Over the past 24-month period, the company delivered 150,000 cu. yd. of concrete to the air craft plant jobs and other construction. Aggregates are handled to the 250-ton, three-compartment steel batch bin by means of a Model 41 Northwest Crane. Cement is moved from freight cars by means of a Butler bulk unloading screw and bucket elevator.

Transit mixed concrete is transported by eight 3-cu. yd. high-discharge Smith mixers mounted on 5-ton cab-over-engine White trucks. There are also four cab-over-engine White trucks with hydraulic dump bodies for transporting aggregates and other materials.

Plans Improvements

Oliver King Sand & Lime Co., has applied to the Nashville, Tenn., office of the U. S. Engineer Office for a permit authorizing construction of river terminal improvements at their plant on the south side of the Tennessee river.

Fleet of eight mixer trucks and four dump trucks with the batching plant shown in the background

Cement Production Lower

BUREAU OF MINES reports that March was the second successive month in which production of finished portland cement was lower than in the similar month of 1942. The March decline was more than double the corresponding 5 percent decrease recorded in February, and production in the first three months of 1943 was 5 percent below that of the same period of 1942. Cement shipments in March, 1943, totaled 10,108,000 bbl. and were one-fifth lower than in March, 1942. Also indicating the decline in demand for cement, shipments in March, 1943, were only about 40 percent greater than average March shipments during the 1935-39 period whereas those in both January and February, 1943, were slightly more than double average shipments during the same months of 1935-39. As production exceeded shipments during March, 1943, stocks of finished cement at mills increased 1,284,000 bbl. over stocks at the end of February to a total of 24,269,000 bbl. on March 31.

Demand for portland cement in March, 1943, was down in varying degrees from March, 1942, in all sections of the country except the Rocky Mountain and Pacific Coast States in which overall shipments were respectively 21 and 3 percent greater than in March, 1942. The decline was most marked in the New England and Middle Atlantic States where shipments declined approximately 40 percent, and in the Middle West where the decrease was about one-fifth from similar data of March, 1942. In the Southern States and in Texas, demand was approximately one-tenth below the March, 1942, level.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of March, 1943, and of March, 1942:

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

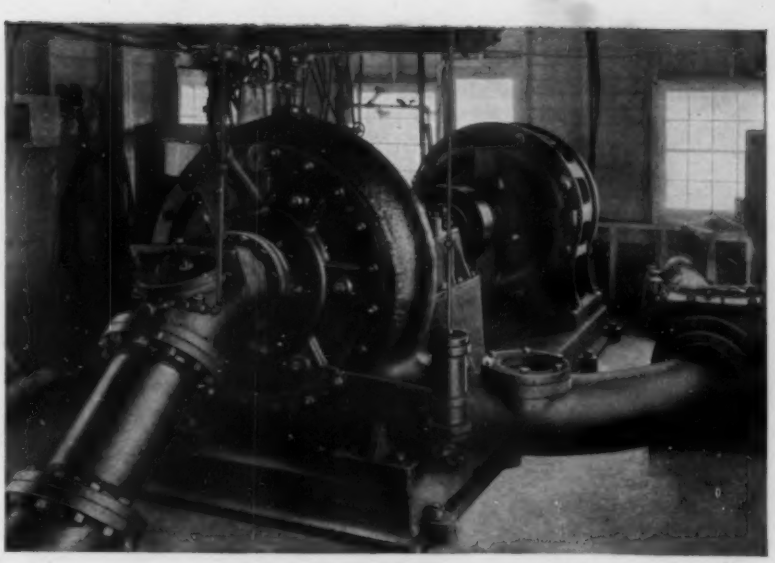
	March, 1942	1943	Feb., 1943	Jan., 1943	Dec., 1942
The Month..	61.0	54.0	54.0	60.0	67.0
12 Months..	69.0	73.0	74.0	74.0	74.0

From Ready Mix to Blocks

J. R. BORGELT CO., Ottawa, Ohio, has set up a concrete block plant at the same location as its ready mixed concrete plant. Four men operate the plant which has a production of 700 block per day.

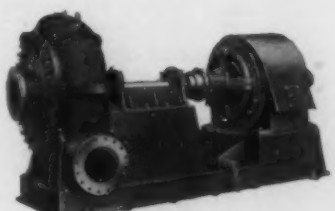
Sell Quarry

MCCLEARY BROS. STONE CO., has purchased the crushed stone plant and quarry of Aaron Ebersole located at Pinola, Penn., near Shippensburg.

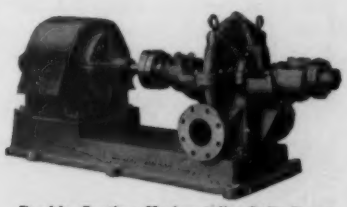


HOW TO SELECT LONG-LIVED PUMPS

There's an old . . . and well founded . . . medical saying that if you want to live long, pick out long-lived ancestors. On that basis alone, the Morris Pumps of today are assured of a long, useful life, for they have the same rugged constitution that has characterized their pump predecessors for more than two human generations. And in addition, the many refinements in design possessed by present-day Morris Pumps have produced remarkably high efficiencies that far exceed those which were formerly possible. Morris bulletins tell the whole story . . . write for copies on centrifugal pump types in which you are interested.



Heavy-Duty Lined Dredging Pump



Double Suction Horizontally Split Pump for Clear Liquids

MORRIS MACHINE WORKS — MORRIS ESTABLISHED 1864 — BALDWINSVILLE NEW YORK

CENTRIFUGAL PUMPS

AGSTONE

Getting the Agricultural Lime or Limestone on the Field

THE A.A.A., according to the article by Donald W. Aitken, in ROCK PRODUCTS for April, takes the view that this year the problem of getting and spreading lime and limestone is largely the individual farmer's problem. After several years in which every possible collective effort has been made to ease the farmer's burden, now, in a year when more agricultural liming materials than ever should be used, he is suddenly thrown back on his individual resources of time, financing and equipment.

One of the most important factors in the past few years, which increased the sales of agricultural liming materials, has been selling the material spread on the field. Several ways of doing this were tried: (1) The limestone producer gave spreader attachments as premiums with large orders; (2) he owned and loaned spreaders and spreader attachments; (3) he used special trucks with built-in spreaders for deliveries (his own or hired); (4) he sold his product to professional haulers who did the spreading.

Limitation on Manufacture of Spreaders

The first difficulty comes from a shortage of manpower. There are fewer truckers to be had. Those who have tried to remain in business are handicapped by difficulties in obtaining tires and truck repair parts. The 3 percent transportation tax complicates matters. On top of all these difficulties is W.P.B. Limitation Order L-170, which restricts the manufacture of lime spreaders to a

Limestone spreader shortage calls for ingenuity on the part of lime producers

small percentage of the 1941 (or 1942) sales. Moreover, the distribution of spreaders this year will not follow the usual trade channels, because they can be sold only to farmers through rationing certificates issued by county rationing committees.

There are several ways of spreading liming materials on the fields, the original and most cumbersome, of course, is by hand with shovels. Then there are manure spreaders. As pointed out by Dr. A. R. Midgley, Vermont Agricultural Experiment Station, in ROCK PRODUCTS, April issue, "spreading manure with lime saves labor and time." Most farmers have manure spreaders and this method of using them as described by Dr. Midgley, might be made a more common practice.

Manure Spreader Attachments

Special limestone spreader attachments for manure spreaders are made. The Minneapolis-Moline Power Implement Co. makes such an attachment, attached to the manure spreader by two bolts, it spreads the limestone by means of two rotating disks, 11-in. above the ground, from a separate box or compartment of the manure box. This company reports that while it is permitted to manufacture a considerable number of manure spreaders, there will be no lime spreader attachments made this year.

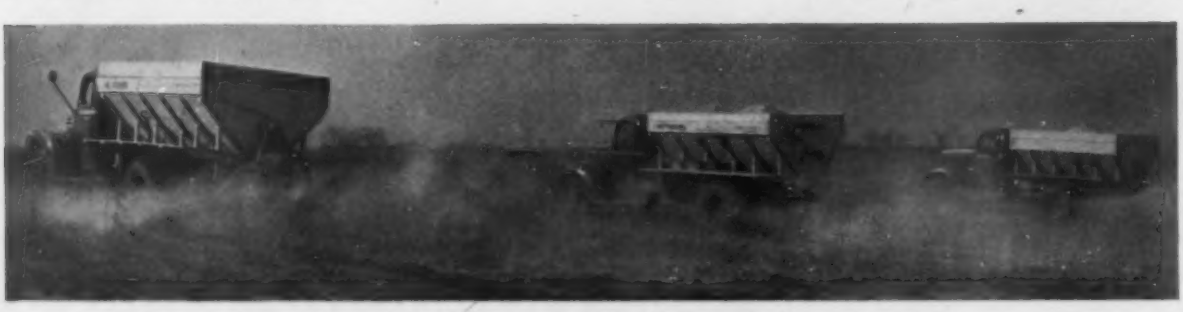
New Idea, Inc., makes a lime spreader attachment for a manure spreader. E. F. Willett of that company states: "We have a small quantity of these attachments built up and in stock now but we do not have nearly as many as will be needed and there is no priority on materials for lime spreading attachments—which attachments are not included in the ration program—therefore, when our present supply has been sold chances are rather slim that we will be able to get materials in the open market to build additional lime spreading attachments. Manure and lime *could* turn out to be the item similar to the 'horseshoe nail' in the story that we all so well know."

Seed drills are commonly used for spreading hydrated lime and finely pulverized lime or limestone. They are likely to be injured by coarser materials, and their use for ordinary agricultural limestone, as commonly made in the mid-west, is not recommended.

Special Lime Spreaders

There are several varieties of spreaders made especially for limestone, to attach to the rear of wagons or motor trucks. For example, the International Harvester Co. makes such spreaders. John W. Vance, of this company, informs us:

"The production of lime spreaders in 1943, like the production of all other farm equipment, is limited by the War Production Board's Limitation Order L-170. In this Order, the W.P.B. divided the farm equipment companies into three classes," based



Three trucks equipped with limestone spreaders distributing loads on a plowed field

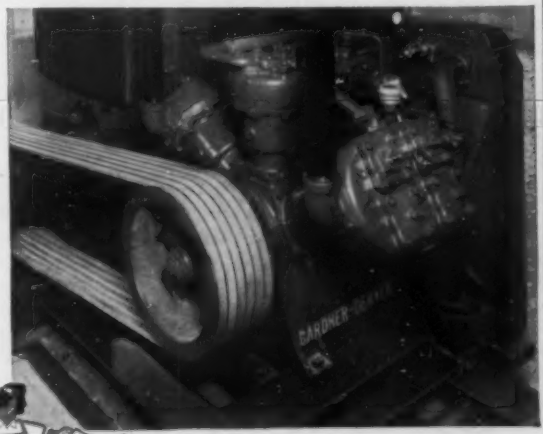
DESIGN

THAT SUITS QUARRY OPERATIONS TO A "TEE"

Skid mounted Gardner-Denver "WB" Vertical Compressor.

Look at the design of Gardner-Denver "WB" Two-Stage Vertical Air Compressors and you'll learn why they are especially suited to quarry work. These compact compressors, for example, are ruggedly designed to save space and weight—require no heavy foundations. Yet they operate at efficiencies comparable to those of much larger compressors—deliver sustained high air output regardless of temperature, altitude, or weather conditions.

Efficient cooling—even where a continuous water supply is not available—is assured by a fan-cooled, self-contained radiator-intercooler. Fully water-jacketed cylinders help keep the discharge temperature down—conserve oil—protect air hose and tools from excessive heat.



Gardner-Denver "WB" Two-Stage Air Compressors are built in capacities of 142 to 445 cu. feet displacement per minute, and they may be used with any type of drive. Suitable for either permanent or semi-portable service. For further information, write Gardner-Denver Company, Quincy, Illinois.

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WHEN PRODUCTION CANNOT LAG

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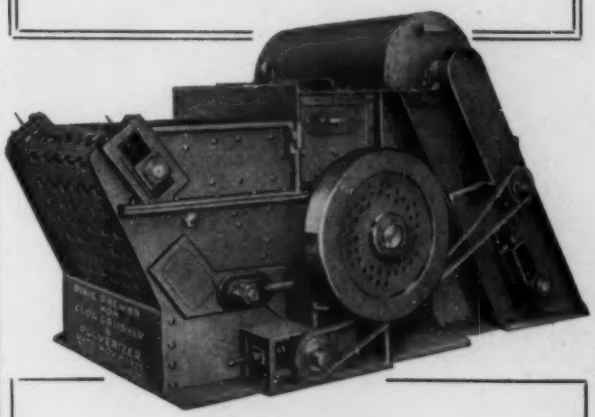

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HAMMERMILLS

NOTE THESE TYPICAL TOUGH JOBS LICKED BY DIXIES

1. Replaced four crushers for high moisture content bauxite . . . cut power in half . . . reduced drying costs . . . increased production.
2. Efficiently crushing clay balls to reclaim phosphate in Florida phosphate plants.
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HERE'S WHY . . .

The Dixie Non Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

And because the Dixie moving breaker plate can be moved forward or backward from the hammer points, quality and size of production can be controlled. This feature provides additional assurance against clogging. These are but two of Dixie's outstanding features. Send coupon below for free booklet, "More Efficient Crushing of Raw Materials" which gives complete facts.

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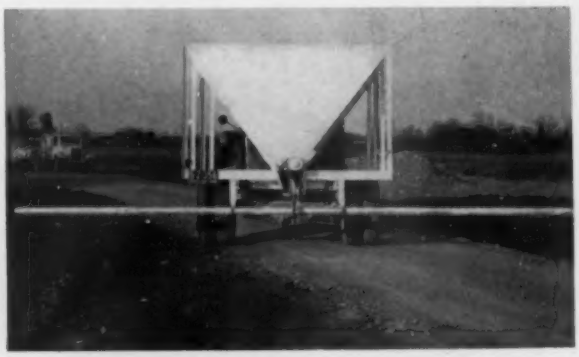

Type of limestone spreader in which the material is sprayed like a liquid. Left: Hopper body mounted on truck. Right: Mechanism for spraying limestone dust

on their volume of sales. Class A comprised the larger companies, Class B the medium-sized companies and Class C the small farm equipment companies. It then established percentage production quotas for each class on each type of farm machinery. These quotas are based on either 1941 or 1942 production, at the option of the manufacturer.

"As contained in L-170 these quotas are:

Manufacturer's Class	A	B	C
Lime Spreaders:			
Wheeled type—horse or tractor-drawn	0	0	17%
Endgate type	0	0	8%
Truck body type	0	0	8%

"As the order was issued, therefore, no large company or medium-sized company was authorized to build any lime spreaders in 1943.

"However, in the case of our company, we had on hand at the beginning of Order L-170 a number of finished and semi-finished parts for lime spreaders in the process of production. The W.P.B. granted authority for the completion of this manufacture. Our company is therefore authorized to make, subject to the availability of materials, about 15 percent of the number of lime spreaders which we manufactured in 1941. This limited production will all be of the wheeled type. We will not produce any endgate type lime spreader. We have never produced truck body type lime spreaders.

"As to the filling of orders from farmers for these spreaders, that is a matter entirely controlled by the Department of Agriculture. All new farm machines are rationed. This rationing begins at the factory. No farm machines are shipped from the factories until the Department of Agriculture has designated the particular county of the United States to which each individual machine must be sent. On its receipt by a dealer in that county, the machine may not be sold except to a farmer who presents a certificate of purchase from his County Farm Rationing Board."

Department of Agriculture Also Controls Distribution

The Oliver Farm Equipment Co., which makes a two-wheeled spreader, quoting the same W.P.B. ruling above, states:

"The only additional production permitted results from appeals to the War Production Board on the basis of inventory on hand. Originally such appeals were granted only if the manufacturer had 90 percent of the material on hand, of which 60 percent of the material was fabricated beyond commercial mill form. Oliver was granted such an appeal for wheel-type lime spreaders, because we had a few in the course of production beyond 1942 quotas at the time the 1942 limitation order became effective. This quantity was only 10 percent of our 1940 production.

"The standard on which appeals are granted was later relaxed, so that for the most implement appeals additional authorizations have been given on the basis of having 75 percent of the material on hand. There are some indications where appeals have been granted when there was a shortage of a particular implement and where only 50 percent of the materials was on hand."

The Red Cross Manufacturing Co., R. W. Rinear, vice-president, reports:

"Our W.P.B. quota on spreaders is very low for 1943. In fact, we are permitted to build only 30. We hope to get the quota increased but even if we do there won't be many of our machines for sale.

"Endgate spreaders, such as we make, are rationed and of course we have to sell and ship according to the distribution plan sent us by the Department of Agriculture. So far we have been sent the plan for Indiana and Ohio only.

"The A.A.A. program has given great impetus to the use of limestone and all of the spreaders which can be built will be quickly sold.

"I am inclined to think that the shortage of spreaders will be good for the stone industry. Farmers will think more about limestone than they ever did before. A spreader is used by the owner only a few days during the year and he can lend or rent it to his neighbors, until such time as more spreaders are available.

Truck and Spreader Combined

The specially designed truck and spreader has been extensively used the last few years in the midwest with highly satisfactory results to both limestone producer and farmer. The use of these obviates handling costs. The trucks are filled at the producers' bins and the material delivered spread on the farmers' fields.

Three makes of these are fairly widely used. The Baughman Manufacturing Co. has three types, one a built-in attachment for flat-bed truck bodies, one for dump-truck bodies, and one with a special hopper-bottom truck body. The first two require feeding by a shoveler in the truck, the third is mechanically fed, known as the "Hi-Speed Lime-spreader." This is the type that has been largely adopted by the professional limestone hauling contractor, or middleman. George Hoffstetter, of this company writes:

"All indications tend to point to the fact that there will be sufficient spreading equipment to take care of the agstone to be spread even though the production of lime

(Continued on page 96)

No time for absentee wire rope

In a mechanized war, fighting equipment *dares not* be absent; industrial equipment *should not.* Even though your wire rope is carrying many an extra burden, proper care will prolong its life. So . . . make sure that inexperienced operators understand its *correct* use. Gear up rope inspection. Avoid damaged sheaves and drums.

The prime way to get top rope performance is to *start* with the stamina of Preformed Yellow Strand. Install it on power shovels for hoist and swing lines, and as crowd and rack ropes . . . on dragline machines, too, for hoist and drag lines . . . and on clam shells for holding and closing lines. Preformed Yellow Strand is a quarryman's mainstay that *will stay* on the job.

Broderick & Bascom Rope Co., St. Louis

Branches: New York, Chicago, Houston, Portland, Seattle
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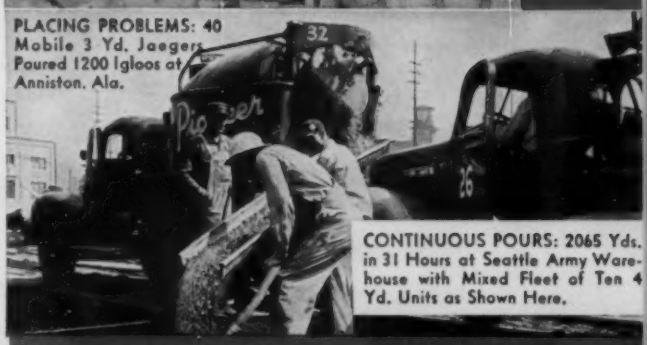
B & B's Army-Navy "E" Flag, Three Times Won, Means that . . .
We Serve the Government as We Serve Industry: with Determination that Our Entire Energies and Resources Shall Help to Win the War

JAEGER *Motorized* CONCRETE PLANTS MEET YOUR PROBLEMS

LABOR SCARCITY IN DESERT — 8 "HIGH DUMP" 4 Yd. Units Averaged Over 120 Cu. Yds. Hourly of Minus 1" Slump on California Bomber Range.

Most of the **TRUCK MIXERS** *now speeding war work are* **JAEGER**

HIGH PRODUCTION: 95,000 Yds. for Ford Bomber Plant @ 2000 Yds. per 16 Hours — with 10 Jaeger "LOW CHARGE" 4 Yd. Units



PLACING PROBLEMS: 40 Mobile 3 Yd. Jaegers Poured 1200 Igloos at Anniston, Ala.

CONTINUOUS POURS: 2065 Yds. in 31 Hours at Seattle Army Warehouse with Mixed Fleet of Ten 4 Yd. Units as Shown Here.

Only JAEGER Offers a Type for Every Need

"HIGH DUMP": Top-Loading, with Fast, Vacuum-Controlled Discharge Door, or Combination Top-or-End Loading—to meet conditions. 2 to 5 yd. sizes.

Four 2 Yd. Units did 198 yds. in a day with this setup at Linthicum, N. C.

"LOW CHARGE": Lowest in market. 2 to 8 yd. sizes. All Jaegers have 2-Speed Transmission (Vacuum-Controlled Truck Engine or Separate Engine Drive), One-Shot Loading, Dual-Mix Drum, Fastest Discharge.

YOU OWE IT TO YOURSELF TO KNOW why more concrete is being mixed and placed by Jaeger Truck Mixers-Agitators than by any other method. *SEND FOR COMPLETE DATA --- TODAY!*

THE JAEGER MACHINE COMPANY
603 DUBLIN AVE., COLUMBUS, OHIO

Prepare Plans Now for Post-War Road Building

American Road Builders' Association convention in Chicago presents program for post-war road construction to spend $3,000,000,000 for three years

MEETING in Chicago, May 4 to 7, inclusive, the American Road Builders' Association and its affiliated organizations representing state highway, and municipal officials, contractors, and equipment manufacturers centered the addresses and discussion on ways and means of implementing the association's Post-War Highway Program. Much credit was given to Charles M. Upham, engineer-director of the association for preparing the program in detail and presenting it to legislative bodies and highway officials.

This program already has advanced to the stage where identical bills are now before the Senate and House road committees. Senator McKellar has sponsored the bill in the Senate and Representative Robinson has presented the bill in the House. They would authorize distribution to the States of $3,000,000,000, at the rate of a billion a year for the first three years after the war. It would be distributed on a 75-25 sharing basis with the States. Half of it would be spent on federal-aid roads, and the remainder would be apportioned equally between urban and secondary rural roads.

The program of the road builders association goes beyond the building of roads and recommends an annual post-war construction program of $12,000,000,000 to $15,000,000,000. Of this amount, private post-war construction should be $10,000,000,000 annually, and public construction should be $5,000,000,000 annually, including at least $3,000,000,000 for highway construction. The highway program is further broken down into a recommended expenditure of $1,100,000,000 by federal and state bodies; $400,000,000 by counties; and $500,000,000 by cities. Approximately $1,000,000,000 annually (federal, state, county and city) will be required for construction in metropolitan areas. Other public construction amounting to $2,000,000,000 annually, will include airport construction and flight strips, as well as the usual governmental public construction.

At the general session on May 6, Paul B. Reinhold, vice-president of the association, and well-known throughout the crushed stone industry, presided.

CARL W. BROWN, president of the association, and chief engineer, Missouri State Highway Department, outlined "The Task Before Us," pointing out the necessity for definite and detailing planning for the post-war program.

GEN. PHILLIP B. FLEMING, Administrator, Federal Works Agency, in his very practical address said that an annual expenditure of 15 billion dollars would be necessary for public and private building to do its share in providing full employment of American workers in the post-war construction program. General Fleming said that there had been too much talking and not sufficient planning for the post-war era. He said, "In general, I think the time for merely speculative post-war planning has passed. The time for designing is here. We know now, or can soon find out, what our needs in respect to highways, flood control works, sewers,

Now FOR INDUSTRIAL LOCOMOTIVES

Now industrial locomotives have been added to the many other practical applications of Murphy Diesel power. Compactness, light weight, and reliability make Murphy Diesels ideal for this service. Always dependable and economical!

Murphy Diesel ENGINES in sizes 90 to 215 HP; GENERATORS in sizes 60 to 115 KW, AC or DC.

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irrigation and soil reclamation, airports, public buildings, public housing, flight strips are going to be if we are to enter upon that better world of which all men dream. The job now is to make it possible for the construction industry to turn the dream into reality."

W. P. WITHEROW, president, Blaw-Knox Co., speaking on the subject, "The Problem of Reconversion," said that the job could only be done by private enterprise. It will be necessary to create the largest national income ever known after the war to pay off the debt, and this can only be brought about through unfettered free enterprise.

HON. JOHN L. MCCLELLAN, member of the Senate Committee on Post Offices and Post Roads, and Hon. J. W. Robinson, chairman, Road Committee, representative from Utah, both stressed the necessity of a carefully planned post-war road construction program and referred to the present bills before Congress, previously mentioned.

MAJOR I. V. A. HUIE, Commissioner of Public Works, City of New York, said that New York has authorized an expenditure of $25,000,000 for planning a public works program which it is estimated will cost $700,000,000.

Post-War Forum

COL. WILLARD T. CHEVALIER, publisher of *Business Week*, was the Moderator of the interesting post-war forum on Friday, May 7. Representatives Jesse Wolcott and James W. Mott presented the legislative side of the picture. Representative Wolcott said he wondered where the billions were coming from to pay for these programs. He pointed out that in peace times money must be created on the basis of production. War type financing should not be used after the war. Hal Sours of the Ohio State Highway Department outlined road construction as a four-point program: 1. Modernization of the trunk highway system; 2. Express highways; 3. Farm-to-market roads; 4. Superhighways. He said that the highway program should be considered as on an investment basis, and not merely an expenditure to make work. R. W. Gamble of Milwaukee said there were 130 miles of paving to be replaced in Milwaukee which had been deferred over a period of ten years. He made a plea for federal financing of city projects, pointing out that city vehicles pay 30 percent of the federal gas tax. Manton Hannah, Waco, Texas, speaking for the county highway officials, said that 28 billion dollars could be spent on 2,500,000 miles of rural roads. James Skelly, head of the contractors division A.R.B.A., promised that the contractors would be prepared with ample equipment to carry out the post-war program. Congressman Mott said that the road building officials must come before Congress with well-defined plans or the "crack-pots" would get into the picture. M. B. (Mike) Garber, acting director, Construction Machinery Branch, W.P.B., said that post-war construction will have to depend on equipment from three to seven years old for the initial phases of the program. He said that new equipment sent over-seas will not be returned to this country. E. R. Galvin of R. G. LeTourneau Co., was of the opinion that there would not be a shortage of equipment for the post-war construction program. He thought some distribution control over raw materials may be necessary. In the discussion which followed Lion Gardiner of Jaeger Machine Co., asked Mr. Sours what the States were doing with surplus gas tax revenues. Mr. Sours said his own State of Ohio is accumulating some of these funds for post-war work and many other States are doing likewise. Gas tax revenue is continuing at a relatively high level but a decline is expected.

As guest speaker at the post-war luncheon, Col. Chevalier gave some

Beat the Schedule with PLAT-O by DEISTER
Dependability . . . the ability to stand up under excessive loads . . . 24 hours a day—week in and week out . . . is the real measure of both man and machine for the duration.
Rugged, smooth running Plat-O Vibrating Screens are designed and built to stand up under the most grueling and unfavorable operating conditions . . . to consistently and accurately grade more tons per hour at a lower cost per ton . . . and even in these demanding times, enable their owners to "beat the schedule."
All welded construction, fully cushioned vibration, positive automatic screen cloth tension . . . are your assurance of dependable, trouble free long life. Delivery can usually be made within a week or ten days. Phone or wire today!
DEISTER MACHINE COMPANY
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very sound advice to the industry. He cautioned against the idea of making the post-war construction program a pump-priming project. "Productivity," he said, "is necessary to win the war, but earning power is required to pay for a war." The post-war program has to be sold on its economic value, on a basis of utility.

Speakers at the closing session emphasized the necessity of free enterprise taking the lead in the post-war reconstruction program. Frank W. Herring of the National Resources Planning Board said that on the basis of a 110 billion dollar national income, 14 billion dollars should be spent annually on construction out of which 1¾ billions should be spent annually on highways by the federal government. Congressman Karl Stefan introduced a sober note into the meeting by stating that the war may last from four to five years. He said anti-strike legislation will be passed by both houses of Congress. Congressman Stefan pointed out only 20 percent of the rural roads are of permanent construction. Mr. Shapiro, speaking for Robert Moses of the New York City Planning Commission, said that a vast amount of work will be available merely from deferred maintenance. He urged that all post-war work be in the blue print and specification stage, ready for bids. H. O. Penn, representing the distributors, said that $750,000,000 annually would be spent for construction equipment. Walter B. Schleiter of the Federal Reserve District No. 7, said that the free enterprise system must set up a program which would have as its objective jobs for all men in the armed services and war workers.

Officers and Directors

Officers and directors elected, included: President, C. W. Brown, chief engineer, Missouri Highway Department, Jefferson, Mo.; vice-president, northeastern district, Paul B. Reinhold, president Reinhold and Co., Pittsburgh; vice-president, southern district, Charles W. Smith, president, Smith Engineering and Construction Co., Pensacola, Fla.; vice-president, central district, Lion Gardiner, vice-president, Jaeger Machine Co., Columbus, O.; vice-president, western district, Robert A. Allen, Nevada state highway engineer, Carson City, Nev.; treasurer, H. C. Whitehurst, director of highways, District of Columbia; members, board of directors, for three years, R. H. Baldock, highway engineer, Salem, Ore.; R. B. Brooks, consulting engineer, St. Louis; J. F. Case, manufacturers sales representative, Firestone Tire and Rubber Co., Akron, O.; P. L. Griffiths, butadiene division, Koppers United Co., Pittsburgh; W. R. Macatee, managing director, Asphalt Institute, New York; A. E. O'Brien, secretary, Associated Pennsylvania Constructors, Harrisburg, Pa.; N. L. Teer, contractor, Durham, N. C.

Illinois Buying Phosphate

UNABLE to purchase requirements for their program in Illinois from Tennessee for the first part of 1943, A.A.A. is taking phosphate rock from Florida, containing 31 percent P_2O_5 instead of 30 percent, but only ground 85 percent through 200-mesh. This gives only about 56 percent through 300-mesh, instead of 85 percent through 300 as produced in Tennessee by the finest grinders, or 65 percent through 300 as produced by the coarsest grinders, which was purchased by A.A.A. in 1942.

Roads to Raw Materials

MORE than 2850 miles of access roads to mines, quarries, and forests have been scheduled for construction by Commissioner Thomas M. MacDonald, Public Roads Administration. These access roads to sources of raw materials are exclusive of the access roads to military establishments and industrial plants.

How an EAGLE Washer
Will Look Over Tokyo
It's a long ways to Tokyo . . . and it may seem a long ways from EAGLE Washers to the bombardier's ringing call, "bombs away." But the fact is that it takes concrete runways, hangars, factories and workers' homes to get Hirohito's hangout lined up in our bombsight . . . and there's still plenty to be done all the way down the line.
There'll still have to be a lot of high grade aggregates. That means there'll have to be a lot of sand and gravel washers kept running at top speed for a long time to come.
All over America, and in steaming far away jungles, in desert outposts and icy wastes, EAGLE Washers are at work. They go with the advance guard to help lay ribbons of concrete runways—the eagle nests of America's growing air might.
EAGLE IRON WORKS
Des Moines, Iowa

two- **CHECK OIL IN GEAR CASES EACH WEEK**

Oil should be changed when it shows signs of thinning and the body of the oil starts to break down. Do not permit the oil to get too low that the gears will not pick up and distribute it. Keep vents in filler cap open to avoid the case leaking.

CHECK ENGINE LUBRICATING OIL TWICE EACH SHIFT

Oil should be checked after machine is stopped and oil has drained back into oil pan. Add oil if necessary. Oil filters should be drained and filters serviced at intervals prescribed by engine builders. (Engines without filters should be drained every 50 hours). Oil screen in crank case of engine should be examined every month and cleaned if necessary.

LUBRICATE CRAWLERS AFTER EACH SHIFT

Grease crawler tread rollers every eight hours regardless of distance traveled or every half mile if they are in continuous operation. Keep crawler treads properly adjusted—never work machine with a loose crawler belt.

SEE THAT OIL OR GREASE REACHES EVERY PART THAT REQUIRES LUBRICATION

When a shaft, gear or clutch is in such position that greasing or oiling is impossible, operator should take time to turn machinery over so that every part may be properly lubricated. Oil lines to inner bearings should be inspected often, as vibrations sometimes loosen line connections. *Lima Locomotive Works, Incorporated, Shovel and Crane Division, Lima, Ohio.*

LIMA SHOVELS - CRANES DRAGLINES

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11 to 13½% Manganese Nickel Steel

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The shell illustrated was reclaimed by welding with Manganal and returned to service and lasted three seasons pumping sand and gravel.

A Bead of Seaco Hard Surfacing Makes Manganal Wear Longer

Sole Producers

STULZ-SICKLES COMPANY

134-142 Lafayette St. ***150 Distributors Are Ready to Serve You*** **Newark, N. J.**

Chemist's Corner

(Continued from page 64)

Therefore, combining (5) and (6)—

$$\% \text{ Clinker} = \frac{BN - nU - 45.44G}{10\ W} \quad (7)$$

All terms in the numerator of equation 6 are determined by direct analysis of the cement. W is calculated from the average of several chemical analyses of the clinker being used. It is equal to twice the sum of the number of moles of CaO (minus moles SO_3) plus the moles of MgO contained in one gram of the clinker. It has been found that deviations from this average of W are so slight for any given type of clinker that its use as a constant in equation 7 gives results which are well within the experimental error of the method.

Results

The results of several determinations on experimentally prepared cements in which the clinker and limestone contents were known are shown in Table I.

[4] The combined additions of HCl and NaOH are equivalent to a 50 ml. addition if about 0.6 N HCl (known as the dissolving solution), and the standardization is made on this basis.

TABLE I

——Percent Clinker—— Actual	Determined	Difference
35.8	34.8	—1.0
44.5	43.3	—1.2
47.7	45.8	—1.9
47.7	48.0	+0.3
47.8	46.2	—1.6
47.8	46.5	—1.3
47.9	47.0	—0.9
48.0	46.8	—1.2
48.0	50.0	+2.0
48.0	49.5	+1.5
50.0	51.1	+1.1
50.4	51.3	+0.9
50.4	51.5	+1.1
50.4	50.0	—0.4
51.9	52.2	+0.3
51.9	52.0	+0.1
59.7	58.5	—1.2
59.9	57.9	—2.0
70.2	69.8	—0.4

Although the above data were limited, the probable error of the method was calculated and found to be +—0.9 in the percentage of clinker actually present. This is probably a conservative figure since some of these determinations were made before the analytical procedure was entirely standardized.

Procedure—Blank Determination and Acid Standardization

When the train is air tight a blank determination should be made as follows: Aspirate a current of air through the system for 10 minutes, after which remove the absorption bottle and weigh. Reconnect the absorption bottle and put 25 ml. of HCl (2.4 N) into the dropping funnel. Remove the aspirator tube and slowly introduce the acid into the reaction flask so that 2-3 bubbles per second of gas pass through the H_2SO_4 trap. Close the dropping funnel stopcock and bring the solution to a boil, while adding 25 ml. of NaOH (1.2 N) to the funnel. When the solution boils, remove the heat source and carefully allow the NaOH to enter the reaction flask.[4] Draw air through the apparatus for 30 minutes at a rate of 2-3 bubbles per second. Remove and reweigh the absorption bottle, designating the gain in weight as (g). Using distilled water, thoroughly wash down the insides of the dropping funnel and water condenser into the reaction flask. Titrate the contents of the flask with standard 0.4N NaOH to the Bromothymol Blue-Methyl Red end point. Compute N, the normality of the dissolving solution to the third decimal place as follows:

$$N = \frac{nV}{50}$$

in which—

V = ml. of standard 0.4 normal NaOH used in back titration of the blank.

n = normality of standard NaOH to 3 decimals.

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This 54" High Weir Type AKINS Classifier is equipped with wash boxes and lifter blades for washing sand.

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The AKINS Classifier does not stall when stopped—requires no unloading to start after shutdown, a big advantage if you operate less than 24 hours. These classifiers are capable of close separations to any specification. Easily capable of big tonnages with low power cost. No complicated mechanisms. *State your sand washing problem when writing.*

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N and (g) should be taken as the average of at least 3 determinations.

Procedure—Analysis

Sweep the system for 10 minutes and weigh the absorption bottle. Weigh a 1 gram sample of cement and introduce it into the dry reaction flask. Pipette 25 ml. of the 2.4 normal HCl solution into the dropping funnel, and begin to drop the acid *slowly* into the reaction flask. Care must be taken not to pass the CO_2 too rapidly through the weighing bottle. Continue as outlined in the blank procedure. Determine the gain in weight of the absorption bottle, and subtract (g), the average gain in weight found in the blank determinations. The corrected figure G, is the net weight of CO_2 evolved from the sample. Titrate the contents of the reaction flask with standard NaOH (0.4N) to determine U. Use the following special form of equation 7 to calculate the percentage of clinker present.

$$\% \text{ Clinker} = \frac{50N - nU - 45.44G}{10\ W} \qquad (7a)$$

in which—

N = normality of the standard dissolving solution.

n = normality of the standard 0.4 normal NaOH.

U = ml. of standard NaOH used in back titration of the sample.

G = grams of CO_2 evolved from the 1 gram of cement.

W = moles of HCl required to dissolve 1 gram of pure clinker.

Western Phosphates

PHOSPHATE production in the Western States has been increasing rapidly, states a Bureau of Mines report. In the last five years, the quantity sold has doubled, reaching a record total of 265,665 long tons in 1942.

Idaho sales in 1942 totaled 114,079 tons. Anaconda Copper Mining Co., at Conda is the principal producer. The Conda phosphate carries a small percentage of vanadium, which is recovered as a by-product. The other company, The Teton Phospate Co., Boise, Idaho, has shipped phosphate rock from Montpelier, Idaho.

Montana was the largest phosphate rock producer in the Western States group with sales of 150,402 tons in 1942. Three producers were operating in 1942: Montana Phosphate Product Co., of Trail, British Columbia, operated the Anderson mine and several Federal leases in Powell County, exporting to Canada; Mineral Hill Mining Co., Butte, Mont., which mined and shipped from Avon in Powell County, and L. H. Skeels, who shipped a small quantity from Maxville, Mont. The Northwestern Improvement Co., St. Paul, Minn., former lessee from the United States, which did not operate and recently assigned its lease to the International Minerals and Chemical Corporation.

In Utah, in 1942, the Garfield Chemical and Mfg. Co., owned jointly by the American Smelting and Refining Co., and the Kennecott Copper Corporation, mined and shipped phosphate rock from federal-leased land near Spanish Fork, Utah county, for use in pig-iron blast furnaces.

Dolomite for West-Vaco

A. E. HAMILTON DRY CHEMICALS, LTD., Hollister, Calif., is planning to lease its quarries for the production of crushed dolomite for West-Vaco Chlorine Products Corporation. About 100,000 tons annually of dolomite will be required for a magnesium plant. If leased, the West-Vaco company plans to install additional crushers and loading equipment that will cost approximately $50,000. The quarries also will supply the Judson Steel Co. and the Columbia Steel Co. A minimum annual rental is fixed at $4800 with a fee of 20c a ton for the dolomite removed.

Collect dust, fly ash and other suspended particles from gases, HOT OR COLD!

They have no filters or screens to choke efficiency no high-speed moving parts to repair or replace.

They require no complicated and costly manifolding are simpler to install, easier to maintain.

They are the product of 36 YEARS of concentrated research and development in the science of recovering suspended particles from gases and liquids—starting with the first commercial application of Cottrell Electrical Precipitation...and represent a scientific solution to problems where cyclonic separation is adaptable.

Let our engineers study YOUR problem. Their wide experience in the recovery of suspended solids from gases can be of valuable assistance to you.

SEND FOR BOOKLET!

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Lime Spreaders

(Continued from page 88)

spreaders has been greatly reduced because of limitations of steel and other materials for their manufacture. There are almost sufficient spreaders now on the market to spread the entire volume that will be produced this year. Priorities are required on all spreaders and orders must be filled according to territories designated by the Government which, in many cases, allot them to areas where we do not have representation. However, the production is curtailed sufficiently so there will be no difficulty in disposing of all the machines we can build."

Another device, also made as an attachment to truck bodies, and built into a special hopper-bottom body, is made by the Highway Equipment Co., under the tradename "New Leader." One special advantage claimed for this machine is that the distributor part of the mechanism is readily removed and the lime stockpiled through the end gate. Thus, if conditions at the point of delivery prevent spreading, the load can be easily discharged to ground stockpile in a few minutes, and the spreading mechanism replaced.

H. A. Wendler, of this company writes: "At this time there is certainly a large demand for spreaders of this type. However, as the War Production Board and the Department of Agriculture included these lime spreaders in the rationing of farm implements, it is necessary for the purchaser to secure a permit or certificate from his local A.A.A. County Board, which he in turn hands to his supplier and in that way the manufacture releases a new lime spreader to him. The important factor of these spreaders is, of course, that it takes no extra help other than the truck driver in hauling and spreading lime with this machine."

Another special truck body and lime spreader combined is made by the "Even-Spread" Spreader Co. C. L. Rosselot, secretary-treasurer of the company, writes: "I have been in the agricultural limestone business for over twenty years and developed the spreader because of unsatisfactory experience with fan and paddle types for fine dry lime, especially when the wind was blowing. It has a V-type bed with small augers in troughs in the bottom, lengthwise of the bed, with provision for easily changing speeds for positive delivery of lime to the rear of the bed. The easily-detachable spreading mechanism, which is mounted crosswise at the rear, consists of small augers mounted in tubes with adjustable holes in the bottoms for different applications. These spreaders have been used for two years and really do the job. They have the approval of agricultural engineers at Ohio State University and several large producers are anxious to secure them."

Producers of Limestone Should Take Initiative

It is evident from what has been written that there will be a scarcity of lime and limestone spreaders. This might be overcome by the most efficient use of those available. Producers of liming materials might make a canvass among the farmers in their sales territories and arrange schedules so that all spreaders are put to maximum use. The farmer who owns one usually has no use for it the greater part of the time, and the limestone producer might act as broker in getting other farmers to borrow or lease it.

When it comes to the specially designed truck-spreaders, the limestone producers might do as ready-mixed concrete manufacturers have done and are doing—pool all available equipment and truckers.

● Cement production on the scale required for Boulder Dams and Grand Coulees is made possible only by modern dust collection equipment—much of it installed by Norblo.

All rock products industries would have smothered in their own dust or would still be in the horse and buggy era except for modern equipment capable of handling enormous volumes of dust as fast as it is created at crushers, kilns, packers.

Norblo engineering and equipment have kept pace with modern industry—and even ahead of it. From now on modernization of dust or fume control will be a major factor in successful manufacture of all rock products.

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Features SAND and GRAVEL

including articles on:
Recovery of Fine Sands—First of a series; first article deals with classification.
Cooperate to Produce War Needs—Special type of plant.
Portable equipment. Unit power plant.
Evaluation of Aggregate Gradations for Pavements.
. . . . plus timely material on other phases of the Rock Products field to assure top-flight reader interest to all divisions of the industry. By leading staff editors and eminent ROCK PRODUCTS contributing editors.

AUGUST

The Big Annual Cement Issue

"Cement—What of the Future?"

. . . is the theme of this yearly, outstanding special issue of ROCK PRODUCTS.

Problems of the cement industry this year, both in regard to war production and post-war plans, are more momentous and "tougher" than in many a year.

That is why it is so timely that in August ROCK PRODUCTS, under the direction of Editor-in-Chief Rockwood, these problems will be outlined and possible solutions offered. Not only by the able staff of R. P. editors, but by prominent authorities active within the industry.

Another unusual opportunity for advertisers in the industry; don't miss it! Schedule your space now for August ROCK PRODUCTS.

August ROCK PRODUCTS will as usual be edited to interest all producers in the Rock Products industries.

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Flotation Possibilities

(Continued from page 55)

producers are so anxious to be rid of may be a valuable byproduct. Mica and feldspar are other unwanted ingredients of many sands, which in a concentrated state have more value than the sand. Like many another, the sand and gravel industry may someday find its profit in byproducts.

For the crushed stone operator, if he has a granite operation, why not recover the mica or the potash minerals that are in the screenings? If a limestone, you may be able to drop your silica, or other impurities, and reach a market in the chemical field for a limestone or calcium carbonate of greater purity.

The portland cement industry has made rapid strides in the use of this new tool in utilizing hitherto discarded limestones.

But there are other possibilities. There are only a few chosen ones who make white portland cement because they are favored with materials that burn white. It is well within the realm of possibility to float (or sink) that part of portland cement raw materials which cause the off-color, so that white cement may be within the reach of most operators. Perhaps some day the portland cement industry may be faced with a competitor, and color control may become an important factor; and flotation is one approach to the solution of the problem should it ever arise.

The phosphate rock industry was a pioneer in the non-metallic flotation technique. It is now applied in the talc, barite and fluorspar industries.

The process is easy to apply and operators can be trained for the work in a few weeks. The process simply consists of flowing the finely ground material in the form of a wet pulp to the flotation machine. This machine, so-called, is simply a glorified egg beater. At the same time, certain chemicals (or reagents) are added which cause some of the component minerals to float, others to sink. The mineral that floats depends upon the type of reagent that is added. These chemicals are no trade secret and in most cases there are no patent royalties to pay, as the process is now about 35 years old.

If you want to have your own materials tested, be what they may, we suggest that you get in touch with some of the manufacturing companies who have for years made a specialty of equipping plants for flotation processing. They have well established laboratory facilities and will gladly help you. To mention a few: Denver Equipment Co., which manufactures the Fahrenwald type of flotation machine; American Cyanimide Co., which has the Fagergren cell; Pan American Engineering Co., which has the Kraut cell; Mineral Separation Co., which has the Mineral Separation (MS) machine; Morse Bros. which has the Weinig type; General Engineering Co., which has a machine similar to the MS machine; Booth-Thompson (unit of the Galigher Co.), which has the Agitair machine; the Southwestern Engineering Corporation have their "Southwestern" cell; the Grooch Engineering Co., which has the Grooch cell. These companies (and others) have been in the business of supplying equipment to the metal miner and they are pioneering with us, the non-metallic field.

New Applications of Flotation Recover Valuable Minerals

In the non-metallic field the reagents that are used are closely connected with the soap industry and such companies as Procter and Gamble have reached out into this field with their vast technical and chemical knowledge, and in many cases they are now prepared to offer help to the non-metallic operator.

To go into the technicalities of why the process works is not the intent of these few opening paragraphs. Suffice here to say that it does work, is simple, is cheap, is positive. For those who are interested in the scientific side, Mr. Dasher's articles will help fill that want.

Probably the simplest and best way to get a preliminary slant on this process is to go see it in operation. In eastern Pennsylvania and in California, there are installations in the cement industry. Near Columbia, Tenn., and around Tampa, Fla., there are installations in the phosphate field. At Roseclaire, Ill., and near Lordsburg, N. M., there are plants in the fluorspar field.

And in all the eleven western states, particularly in Arizona, Nevada, California, Colorado, Idaho, Montana there are scores of plants in the metal mining industries that have enormous flotation plants. If any reader of Rock Products wants to know the location of a flotation plant nearest his home address, we would be glad to supply what data we have that is available.

Each day we learn of new application of flotation; garnet, talc, coal; and it even has found application in the flour milling industry for separating the different parts of a wheat kernel. It was even used for separating thistle seeds from alfalfa seeds. The differences in specific gravity of the minerals being separated are not even considered, one can float the heaviest and sink the lighter, or vice versa. It is common practice to float gold which has a specific gravity of 19.7 and sink the silica which is in the 2.65 sp. gr. range.

There is only one requirement and that relates to the fineness. In some special cases material as coarse as 10-mesh is being floated in what are known as unit cells, but for most work 30-mesh and finer is required.

As Mr. Dasher points out in his series of articles, theoretically at least, any two or more materials can be separated from each other; so the possibilities in the non-metallic field are far greater than in the metallic field. And when we think that hardly a pound of copper, lead, zinc, silver, molybdenum or tungsten is now produced but has the imprint of flotation on it, there must be a chance for it in your own backyard.

New Gypsum Products

Speaking to his plant superintendents and production chiefs, at a recent 3-day session, Melvin H Baker, president of the National Gypsum Products Co., described several new products including laminated gypsum roof planks, which are being used for fireproof roof decks for factories, Army and Navy warehouses.

"Inch-thick fireproof gypsum panels take the place of steel partitions and, incidentally, save two-thirds of the amount of framing lumber ordinarily required," said Mr. Baker. "Next, we developed weather-resisting exterior boards to take the place of wood sheathing and siding. They, too, provided a high factor of fire-safety. Recently, as wood became even scarcer, we developed a special gypsum for the sloped roofs of war worker homes."

When the demand for gypsum plasters for pottery molds and plate glass polishing operations dropped off, the firm's engineers devised molding plasters "that now speed the precision casting of nonferrous metal parts of airplanes, tanks and other instruments of war," Mr. Baker said. "And a spectacular new use developed when self-sealing liners are all built over gypsum plaster molds."

Reopen Lehigh Plant

Lehigh Portland Cement Co., Mitchell, Ind., plant has resumed operation after a shut-down on March 20, according to a local announcement from William H. Witknecht, superintendent.

SAND AND GRAVEL CAFETERIA — *A BUTLER Engineered Design—*

It's not exactly self-service, but it's there when you want it. Many sand and gravel plants, like this one, find Butler bins indispensable for storing materials for quick delivery. The truck driver need only pull a lever and he has his truck-load.

Butler bins and batchers serve the sand and gravel industry in many other ways as well —in crushing plants, screening plants, for charging conveyors and trucks. Investigate Butler equipment for your application, remembering that they are more than merely bins and batchers; each is an engineered design.

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The Williams "SLUGGER" Crusher and Pulverizer Handles "ONE MAN" Stone • Saves Sledging

Also Makes 1¼", ¾" or Agricultural Limestone in One Operation

CUTAWAY VIEW of "Slugger" showing heavy duty hammers, liners and discs.

By reducing large rock to 1¼", ¾" or agricultural limestone in one operation, the "Slugger" has enabled operators to produce these sizes at a low cost per ton and with small investment.

Features include—Manganese steel hammers, heavy duty SKF bearings, adjustable breaker plate, hammer adjustments overcome wear, economical to operate.

The "Slugger" is built in Seven Sizes—from 30 to 150 horsepower —write for illustrated bulletins today.

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PATENT CRUSHERS GRINDERS SHREDDERS

Mineral Wool Meetings

NATIONAL MINERAL WOOL ASSOCIATION has been holding a series of regional meetings of dealers, distributors, and contractors in various important cities throughout the United States. The purpose of these meetings is to stress the importance of saving fuel through adequate insulation and to urge home owners and others to have insulation installed as early as possible to make possible the maximum use of available labor and materials. Government speakers have addressed these gatherings to discuss priorities, the labor situation, availability of equipment, etc. Speakers at the recent meeting in Chicago on May 19 included: E. L. Hughes, Office of Petroleum Administrator; E. L. Liese, regional supervisor, Construction, War Housing; O. E. Larish, regional Fuel Oil Ration representative; and Wharton Clay, secretary, The National Mineral Wool Association.

California Plants Active

TRIANGLE ROCK & GRAVEL Co. has operated several large sand and gravel and ready mixed concrete plants for big war projects in southern California. Its San Bernardino plant has a record pour of 1730 cu. yd. of concrete in 14½ hours. It also operates large plants at San Diego and Barstow, Calif.

CALIFORNIA PORTLAND CEMENT Co., Colton, Calif., has been extremely active filling orders for government construction, about 90 percent of its production going for war work.

SOUTHWESTERN PORTLAND CEMENT Co., Victorville, Calif., plant also has been working at capacity on war work.

Oregon Liming Program

CONTRACTS for over 21,000 tons of agricultural limestone have been placed by A.A.A. with five plants in Oregon and Washington: Limestone Products Co., Dallas; T. T. Leonard, Marquam; Oregon-Portland Cement Co., Oswego; F. D. Green, Chinook, Wash.; and Washington Brick and Lime Co., Williams, Ore. Cost of the liming material this year ranges between $4 and $6 a ton for 95 percent bulk at the plant. Transportation charges are paid by the farmer. For applying the liming material, farmers can earn a production practice payment of $5.25 a ton for 90 percent liming material under the 1943 A.A.A. program.

Pumpcrete Practice

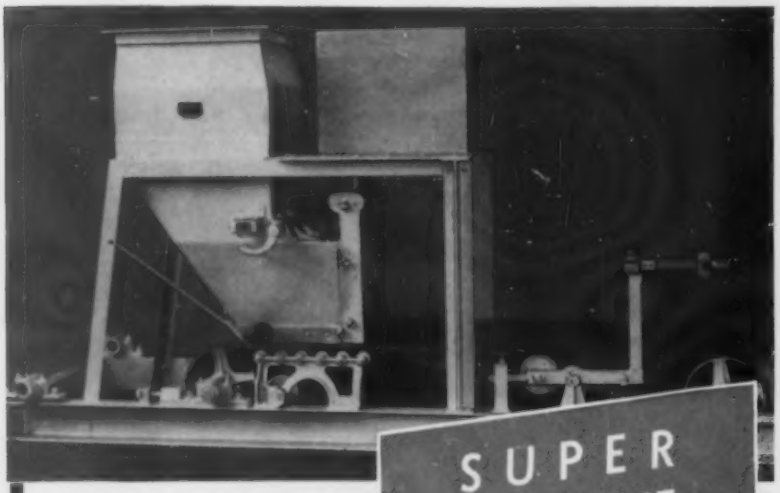
WHILE only indirectly related to the rock products industry, a new Bulletin 422 "Rex Pumpcrete Practice" will be found to contain much of interest to this industry. It is a 164-pp. text-book on the placing of concrete by concrete pump, with data and illustrations taken from many sources. The chapters on mixing plants, including the use of truck mixers, probably will be found of most interest. Copies are available by writing to the Chain Belt Co., Milwaukee, Wis.

COMING CONVENTIONS

National Industrial Sand Association, Palmer House, Chicago, Ill., June 3 and 4, 1943.

American Society for Testing Materials, Hotel William Penn, Pittsburgh, Pa., June 28 to July 2, 1943.

Chemical Industries Exposition, Madison Square Garden, New York, N. Y., Dec. 6 to 11, 1943.



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The electrically controlled Schaffer Poidometer is unusually accurate in weighing materials of constant variation in size. It has a motor operated regulating gate, controlling the feed of the material, which responds instantly to a change of weight on the belt scale platform.

The Poidometer construction is rigid and durable—bearings are dust tight, with alemite fittings for lubrication. All sensitive operating parts are fully enclosed. The conveying part of the Poidometer may be made any length up to 35 feet.

The amount of material delivered may be varied by applying the desired weight on the scale beam and at the same time adjusting the average height of the regulating gate.

PROPORTION ACCURATELY BY WEIGHT WITH SCHAFFER POIDOMETERS

Write for illustrated folder, Number Two

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CONCRETE PRODUCTS AND CEMENT PRODUCTS

CONVERT BRICK PLANT TO CONCRETE PRODUCTS MANUFACTURE

Concrete Products Corporation plant in Memphis, Tenn., converted from brick plant. Note rail system for handling block into storage.

New Units for Big Jobs

Concrete Products Corporation, Memphis, Tenn., supplies four million large size concrete brick for one large project

By WALTER B. LENHART

T. J. Branch, plant manager

CONCRETE PRODUCTS going into numerous defense jobs in the Memphis, Tenn., area are in themselves doing a job of advertising that is going to assure a continuing demand after the war's needs are filled. This is the opinion of one of the officers of Concrete Products Corp., a subsidiary of the Fischer Lime and Cement Co., Memphis, Tenn. The steady and growing use of concrete masonry units will follow this present heavy demand because people are seeing the advantages of this type of a building unit, he believes.

On one job alone 4,000,000 industrial brick of concrete were used. These brick are 3¾- x 3¾- x 8-in. and are roughly one and two-thirds larger than a standard brick. Thus they lay up in a wall faster with less mortar and are meeting with enthusiastic approval. The company has sold upwards of 6,000,000 of these brick the past year. They also sold over 1,000,000 concrete block, of which sales defense needs probably accounted for a large percentage.

One can here quickly get an inkling of "things to come" in connection with this company, for they supplied 400,000 concrete block to a newly built Army hospital. The first sale was for a 1500-bed unit, then another 1500-bed unit was added and is now in final stages of completion. It is rumored a third unit of 3000 beds is to be started soon. Some of our boys from Guadalcanal and North Africa are now occupying some of these beds. Army hospital construction is going to loom large in our civilian life and it may jar us out of our complacency.

The Fischer Lime and Cement Co. is probably better known to readers of ROCK PRODUCTS because of their sand and gravel, ready-mixed concrete and lime operations, owned in full or in part by the company, or operated as a subsidiary corporation. Their ready-mixed concrete operations include two plants in the Memphis area in addition to batching facilities provided by the two larger sand and gravel plants, owned and operated by the Missouri Portland Cement Co. and the Marquette Cement Manufacturing Co. They have a fleet of 32 Jaeger trucks and recently purchased six Transport Mixer trucks, yet the concrete products volume of sales is one of the largest single items of the company's many basic building materials sales. In other words, they are busy.

The concrete products concern was started in 1939 by L. T. McCourt who is now president of the Fischer Lime and Cement Co. He established the plant in South Memphis near the intersection of Mallory Road and South Lauderdale Ave., using the grounds and buildings that were originally a part of a clay brick manufacturing plant. The set-up was ideal because the track layout, storage yard, and steam kilns, not to mention a large,

One of the two smaller vibrating type concrete block machines in operation

Large vibrating type block machine which has been operated around-the-clock to keep up with demands from defense projects

one-storied frame building, were all provided by the defunct clay company. Thus, for instance, they have a superabundance of steam curing capacity as there are 12 kilns in service and an additional 12 can be quickly made available should the need arise. These are of clay brick construction and are about 100-ft. long. They hold 13 cars of brick per kiln so steam curing can be prolonged if wanted, although overnight curing at atmospheric pressure is the more common practice.

Straight Line Production Method

Employing 55 men, the plant has a capacity of 14,000 standard size and 12,500 industrial concrete brick per day. In addition to the Stearns No. 7 Joltcrete machine capable of turning out 2800 8- x 8- x 12-in. block per 8-hour day, there are two Kirkham machines, each of which put out about 800 block per day.

All block machines are installed in a straight line, and are provided with individual mixers supplied by each block machine manufacturer. Mixers are placed at ground level and the mixed concrete is hoisted to each machine by individual skips.

Aggregates used are fairly evenly divided between conventional sand and gravel and the light-weight material, Superock, which is manufactured by Superock Co. of Birmingham, Ala. This light-weight aggregate is prepared at the steel furnaces by treating molten slag with water sprays which results in a porous but highly desirable light-weight material.

Aggregates are delivered to the plant by rail in hopper bottomed cars, and are spotted on an elevated ramp and dumped to ground storage. The material is delivered to the mixers by wheelbarrow. Bagged portland cement is used.

By running the plant night and

(Continued on page 108)

Mixer feeding skip hoist to concrete block machine. Note screen covering mixer to prevent foreign materials from dropping into it

SPECIALTIES

Concrete Shower Bases Save Critical Metals

By RALPH S. TORGERSON

Advance Cast Stone Co., also manufactures granite-faced block, cast stone panels and tile

Attractive office and display room, Advance Cast Stone Co.

WITH THE W.P.B. placing restrictions on the use of metals, a new opportunity has come to concrete product manufacturers to supply items which heretofore have been made largely of metal.

The Advance Cast Stone Co., Milwaukee, Wis., has been very busy making concrete shower base receptors in which very little metal is used. In fact, the drain fixture in the center of the base is the only metal used. The illustrations show the equipment and steps in the manufacture of the concrete shower base receptors which are 36- x 36-in. and about 4-in. deep at the sides.

A mix composed of torpedo sand and masons sand with high-early-strength cement is batched in a 5-cu.ft. Blystone mixer. Ammonia stearate is added to the water as a water-proofing or repellant agent. It is a comparatively dry mix designed for hand-tamping in the mold forms which have been treated to facilitate removal of the finished shower base units. Concrete is handled to the forms in wheelbarrows.

The wooden molds for casting the shower bases are of considerable interest. Each mold comprises three pieces; a bottom section which positions the metal drain fixture and the two angle side sections that form the sides. Tops of the side sections are reinforced with strap iron. The entire mold assembly is held together by means of wooden wedge blocks and two wing screw clamps at the corners, as shown in the illustration.

After the dry-mix has been tamped into the mold and the bottom trowelled smooth, the "green" concrete shower base can be almost immediately stripped from the mold. Stripping of the mold is a comparatively easy job. The mold is turned over onto a wooden pallet, the wooden wedges knocked out with a hammer, and the screw clamps are loosened. When the shower base has set sufficiently for safe handling, it is removed into the curing room where it is subjected to a water vapor spray for six days. After another four days it is ready for yard storage or shipment.

When thoroughly dry the bottom of the shower base is painted with an asphalt base paint. Most of the concrete shower base receptors are shipped by rail into freight cars on a siding at the front of the plant office. Shower bases are loaded into a company truck and moved to the freight car door which reduces lifting of the units.

Make Granite-Faced Block

The Advance Cast Stone Co. also has earned an enviable reputation as a manufacturer of so-called "Granite-Insulex" concrete block. This unit is made with a cinder aggregate concrete block base and a facing of crushed stone aggregate concrete in buff, pink, white, and

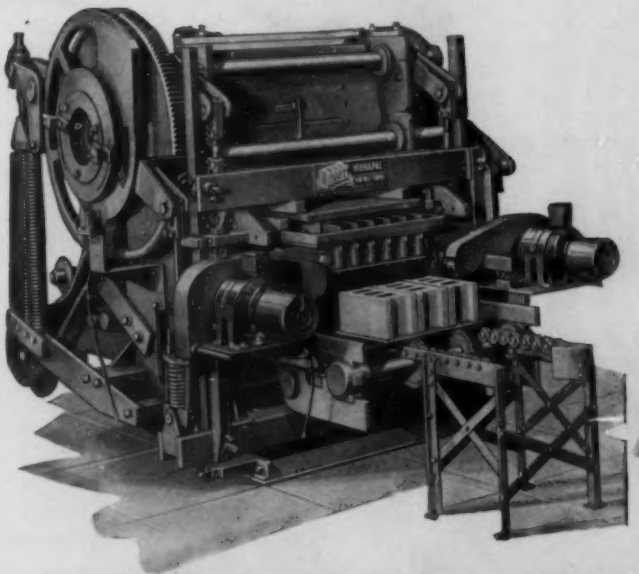
Left: Showing wooden mold, sides of which are held together by clamps and wedges. Right: Mold filled with dry mix of concrete ready for tamping

For Permanent Peace and Permanent Homes

This is one of the many types of beautiful moderate priced concrete masonry homes which have been built in large numbers during the past few years with Besser Vibrapac block

VICTORY BONDS PAY DOUBLE. They will help win the victory and permanent peace and they can be used to pay for new homes, thousands of which will be built with concrete masonry for permanence. Concrete masonry provides other advantages, too—such as heat and cold insulation, low upkeep and low first cost. Large scale use of concrete masonry for government building construction will help to promote its use for private building after the war. Bonds bought today will build these homes of tomorrow.

A large backlog of investment capital is being built up by purchasers of Victory Bonds. The shortage of homes now existing will be increased after the war. These bonds — in large numbers — have already been earmarked for home building. In many localities before the curtailment of private building, large scale home construction projects demonstrated the quick public acceptance of Besser Vibrapac block for beautiful low cost homes. After the war the Besser Vibrapacs now working full time on contracts for war emergency building will be producing these high quality Vibrapac block for private home construction for which there will be a greater-than-ever demand.



Besser Super Automatic Plain Pallet Vibrapac with Mixer and Skip Loader. Capacity 600 8"x8"x16" per hour made 3 at a time on one plain pallet Smaller units made in large multiples on the same pallets.

Important Patent Notice

Licensed under the Gelbman basic vibration patents.

Undirectional vibration licensed under Flinn patents.

The Vibrapac combines vibration and exclusive patented Besser Plain Pallet principle.

BESSER MANUFACTURING CO.

206 Forty-Third St. • Alpena, Mich.

Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

Left: Mold turned upside down, ready for stripping. Right: Corner of vapor curing room showing finished shower base receptors

grey colors, depending upon the aggregate used. It is cast on a special block machine designed by President B. Garni. This machine consists essentially of two hoppers feeding the special facing concrete mix to the molds on a vibrating table. A ½-in. face of this concrete facing is vibrated in place on cinder concrete block. A water-repellant agent is added to this mix to make the facing waterproof. About 1700 granite-faced block are made in an 8 hr. day. These units are made in a 4-in. width, solid, for veneer construction, and 8-in., two-core units are cast to represent an ashlar effect. For commercial buildings, 10-in. and 12-in. two-core units are manufactured. The granite-faced units can be made in nearly any color desired, using natural colored crushed stone aggregates, but the popular shade is buff. The Advance Cast Stone Co. has supplied many units for attractive residences and commercial buildings in the Milwaukee area, and builders and contractors over 100 miles away have placed orders for these attractive units.

Special aggregates for the facing are crushed in a small crushing plant adjacent to the concrete products plant which may be seen in one of the illustrations. Refuse rock from dimension stone quarries in Wisconsin is obtained at relatively small cost. This rock comes in small irregular shaped pieces which are no longer of value for dimension stone purposes, and includes various shades of granite and marble. The stone is crushed in a Gilson hammer mill to minus ½-in., the product dropping into a hopper feeding the boot of a bucket elevator which carries it to a hopper at the top of the plant. From this hopper the crushed rock is chuted to a trommel screen which screens out plus ⅜-in. Oversize is chuted back to the hammer mill, and the screen throughs are chuted to bins.

In addition to the Granite-Insulex masonry units, the Advance Cast Stone Co. makes cast stone concrete tile and panels for decorative treatment of stores, office buildings, hospitals, etc.

To the left: Aggregate crushing plant where facing material is prepared for special block. To the right: Hammer mill in which hard-facing aggregate is prepared

Ohio Safety Congress

ROCK PRODUCTS producers in Ohio through the Cement, Lime, Quarry, Sand and Gravel Section of the All Ohio Safety Congress have been active participants in the safety program. About 100 persons were in attendance at the meeting on April 21. Officers elected for the 1944 sectional meeting were: Chairman, D. J. Carpenter, National Lime and Stone Co., Findlay, Ohio; vice-chairman, Claude L. Clark, Ohio Sand and Gravel Association, Columbus, Ohio; and secretary, F. W. Weber, Standard Lime and Stone Co., Woodville, Ohio. At the close of the sectional meeting, the Standard Lime and Stone Co., was awarded the Lime Burner Safety plaque and the Basic Refractories Co., was awarded the Quarry Certificate. As a result of the Sand and Gravel Safety Campaign, the Killbuck Sand and Gravel Co., Killbuck, Ohio, was awarded the Safety Certificate in the group of more than eight employes, and The Schmidt Bros. Sand and Supply Co., Cleveland, Ohio, was awarded the Safety Certificate for eight or less employes.

Concrete Products Leaders Meet Government Officials

MANUFACTURERS of concrete masonry units in the Middle Atlantic States and representatives of United States government agencies and seven foreign governments met together on April 15 at a dinner in the Hotel Statler, Washington, D. C., tendered by Besser Manufacturing Co.

The object of this meeting was to discuss and demonstrate the importance of concrete block for healthful, inexpensive housing and industrial building construction for the present and post-war period. Motion pictures illustrated modern developments in high production, precision concrete block machines.

Prominent representatives of the following United States and foreign government agencies at the dinner were as follows: Lee Ross, Coordinator of Inter-American Affairs, Press Division, and four representatives from his department; the U. S. Department of Agriculture, Office of Foreign Agricultural Division; Federal Works Administration, Pan-American Highway, represented by Edwin W. James; Public Works Administration; U. S. Housing Authority; War Production Board; Office of Chief of Engineers, War Department; Pan-American Union; Pan-American Sanitary Bureau (two delegates); Commonwealth of Australia represented by J. C. Mitchell, and R. Wilson; Rubber Development Corporation; U. S. Soviet Russia (three delegates); Legation of Iceland; Mexican Embassy (three delegates); Chilean Embassy (two delegates); Brazilian Embassy; and Venezuelan Embassy.

George W. Hoffmann, Latin American representative of Besser Manufacturing Co., told how Brazil, Venezuela, Panama, and other Latin American countries through their social security organizations, had housed the natives in concrete block dwellings with modern sanitation and had made these people more efficient citizens of industrial communities and agricultural developments.

P. M. PARK, vice-president of Besser Manufacturing Co., was toastmaster; J. H. Besser, president of Besser, introduced the concrete block manufacturers; and George W. Hoffman, Latin American representative of Besser, introduced the guests from United States and foreign government agencies and also addressed the meeting on "The Importance of Concrete Block Construction in Latin America"; E. W. Dienhart, executive secretary, National Concrete Masonry Association was on the program to tell about The Development of the Concrete Block Industries in the United States of America; and motion pictures were shown by Haakon Paulson, general sales manager of Besser.

New Uses for Concrete

GLENN C. BARNES, president of the Auburn Cement Products Co., Auburn, N. Y., recently addressed the local Rotary Club on the subject of "heavy plastics." Mr. Barnes used the term as applied to concrete products, and demonstrated his talk with samples of smooth, glazed slabs of concrete which, he said, were stainless and weatherproof. He also displayed a heavy sample of concrete used for ballast block in which iron ore is the aggregate. Mr. Barnes' company furnished a substantial part of the three million concrete block used in the Sampson Naval Training Station and part of the two million block order on another government project in New York.

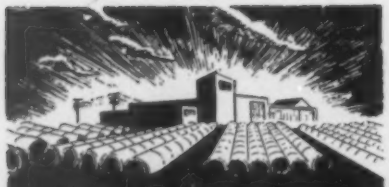
Concrete Tanks for Oil

THE NAVY is constructing hundreds of concrete tanks in which to store oil and gasoline as a steel conservation measure. These tanks are being built underground, and reinforcing is all prestressed. For storage of heavy fuel, it was found that all that was necessary was to paint the inside of the tank with waterglass. For Diesel oils and gasoline, three different types of lining materials were developed. One type is a vinylite plastic, painted on the tank interior. Another is sheet thiokol cemented to the interior. The third type comprises a thiokol in latex form and a layer of cotton fabric. The latex thiokol is first painted on the inside of the tank, and then the layer of fabric is imbedded on the latex which is followed up with another coat of latex. Tanks range in capacity from 25,000 gal. to 2,520,000 gal.

Steel for Burial Vaults

W.P.B. has granted the concrete burial vault industry an extension of 60 days to June 30 to use material in inventory or to purchase from other vault manufacturers who have more steel than they require.

Left: Some of the concrete product manufacturers and United States and foreign government representatives. P. M. Park, vice-president of Besser Manufacturing Co., addressing the meeting. Right: Geo. W. Hoffmann, speaker, and guests, left to right, Edwin W. James, Public Roads Administration; Lee Ross, Coordinator of Inter-American Affairs; and John C. Geyer, assistant chief engineer, Coordinator of Inter-American Affairs



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Make Both Large and Small Pipe Profitably

UNIVERSAL not only offers an "all-purpose" machine to produce every size of concrete pipe from 6" to 48" but also equipment for larger sizes such as the 135" pipe we have furnished for highway work.

You are assured of getting superior equipment to produce the finest pipe at a profit from UNIVERSAL.

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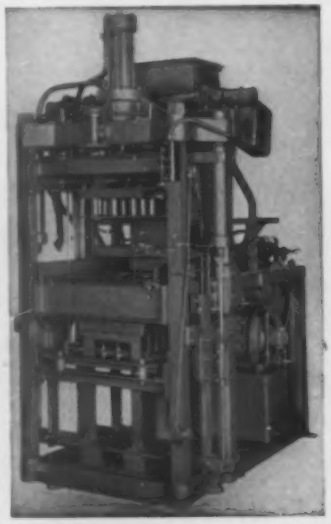


A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

Industrial Brick

(Continued from page 103)

day, the company has been able to supply customers and build up a large store in their yard. The fact that during March of this year it rained practically every day in Memphis, thus holding up some construction jobs, also accounted, in a measure, for the well stocked yard. Almost a million standard concrete brick (2¼- x 3¼- x 8-in.) and 580,000 industrial brick, 450,000 block (8- x 8- x 16-in.) and some 27,000 large size block (12- x 8- x 16-in.) were on hand. Stocks of single and double bull-nosed sash tile, partition tile and some special items—park benches, pier footing blocks, etc., are also manufactured. Lintels up to 20 ft. in length are made on order.

Although two railroad spurs serve the plant, very few deliveries are made by rail. Practically all of the plant's output is hauled by truck on a contract or unit basis.

All sales are made through the office of the Fischer Lime and Cement Co. whose sales staff covers the Memphis area, and due to their other activities are able to give personal attention to the matter of extending the use of concrete products.

The office of the company is at 269 Walnut Street, which is the main office of the Fischer Lime and Cement Co. L. T. McCourt is president; John Moran, sales manager; and T. J. Branch, plant manager. .

Porous Concrete

TESTS of the physical properties of a porous concrete, consisting solely of portland cement, water, and uniform-sized gravel, were recently made by the National Bureau of Standards, and a paper covering the investigation has been prepared by Perry H. Petersen of the Bureau.

Each of three coarse aggregates, grits (No. 8 to No. 4), pea gravel (No. 4 to ⅜-in.), and ¾-in. gravel (⅜ to ¾-in.), was used, with 2½ bags of cement per cubic yard in concrete tamped in place and 3 bags per cubic yard when no compacting was done. Walls, wallettes, beams, and bond pull-out specimens were tested, as well as 6- x 12-in. control cylinders. Compressive, transverse, shearing and bond strengths are reported, as well as resistance to heat transfer, water penetration by capillarity, and rain penetration.

One advantage claimed for this type of concrete is that in certain localities, there is an abundance of uniform-sized gravel compared with the supply of the graded aggregates used in regular concrete. Since sand and other size gravels are excluded in the proportioning of the ingredients and the cement content is kept down to about half that of the usual structural concrete, a highly porous material is obtained.

The compressive strength of the tamped cylinders ranged from 600 to 900 p.s.i. Resistance to heat transmission decreased as the size of aggregate increased. Resistance to rain penetration of walls to which ⅛-in. stucco was applied was excellent. Bond stress was about three-fourths of that obtained for regular concrete. Computed shearing stress in the beams at failure was about 80 p.s.i., this value being about one-half of that expected for a regular concrete with a compressive strength of 2500 p.s.i.

Federal Housing Using Concrete Block

EVERETT, WASHINGTON, has a large federal housing project, No. 45072, which involves 55 buildings and will require 100,000 concrete masonry units 8- x 8- x 18-in., according to local reports. Mullen & Strand are the general contractors. The interior walls will be furred and plastered, and the exterior walls will be painted with portland cement paint. E. W. Morrison, Seattle, Wash., is the architect.

•

UNITED CEMENT PRODUCTS CO., Wichita, Kans., will furnish the concrete masonry units for an F.H.A. project which will include a spacious new auditorium, large administration building, and maintenance warehouse. This company also is furnishing 130,000 concrete units for coal bins. About 2900 homes will be built in which concrete masonry units will be used.

•

DURING APRIL, construction was started on approximately 13,400 privately financed family units for inmigrant war worker families under the insured mortgage program of F.H.A. During the first four months of 1943, construction was started on 34,700 new dwelling units, compared with 60,170 units started during the same period in 1942.

Enters Block Business

THE BUCKEYE FARM REALTY CO., Swanton, Ohio, has entered the concrete block business, having recently purchased an Anchor machine. Walter J. Hallett, head of the company, advises that the company has been building homes in this area for some time.

What Causes Volume Changes in Masonry

By F. O. ANDEREGG

IT HAS BEEN POINTED OUT by Davis and Troxell,[6] emphasized by Anderegg[1] and confirmed by Kenneth Anderson,[5] that metal-molded specimens give results differing appreciably from similar measurements made on the same mortars in contact with masonry units. The combined suction and packing reduce the water-cement ratio. With bricks of medium and high absorption, which comprise 80 per cent of brick masonry, the effect is considerable.[4] The same is true with most other masonry units. It is respectfully urged that the results obtained with metal-molded specimens cannot safely be extrapolated to masonry walls.

Fitzmaurice of the British Building Research Station makes the following statement,[7] about external panel walls built of bricks and hollow clay blocks, "The moisture movements of well-fired clay materials are small and the proportion of mortar to unit is small. Moisture movements (volume changes due to wetting and drying) are not likely to be troublesome and no special precautions are required." In his Table 26, entitled, "Precautions to Avoid Shrinkage Crackings with Various Materials Due to Change in Moisture Content" well-fired clay-bricks and blocks, terra cotta and limestones are listed as having very small magnitude of moisture movement. For concrete-bricks, cast stone, etc., emphasis is placed upon proper curing of the units before use. Sandstones are apt to show appreciable movements, while in rubble masonry the volume of mortar may be so great that the initial shrinkage becomes important.

In the experiments of Anderegg[1, 2] involving piers and panels, exposure to the air while wet doubtless resulted in some cooling to lower the apparent expansion. The same must hold true also for masonry walls wetted by rains, to reduce differential stresses between units and mortar. Such cooling, however, did not occur where the change in length of a mortar joint was measured, because of the immersion of the specimen.

It is suggested that with masonry joints, not over ½-in. in thickness, wetting and drying is apt to produce little if any damage. Moreover, wetting tends to soften the mortar, a condition favoring creep to reduce stress. On the other hand, on drying out, stress concentrations affect the drying mechanism in such a way as to increase creep.

The following data are taken from Fitzmaurice's Table 27.[7]

	LINEAR COEFFICIENT PER DEG. F. x 10^6
Limestones	1.3 to 4.8
Igneous Rocks	4.4 to 5.7
Steels and Irons	5.7 to 7.2
Concrete	5.5 to 7.8
Concrete limestone	3.8
Concrete quartz	6.6
Sandstones	3.9 to 6.8
Marbles	0.8 to 5.9
Bricks	2.4 to 5.3
Brickwork	5.5 to 7.8

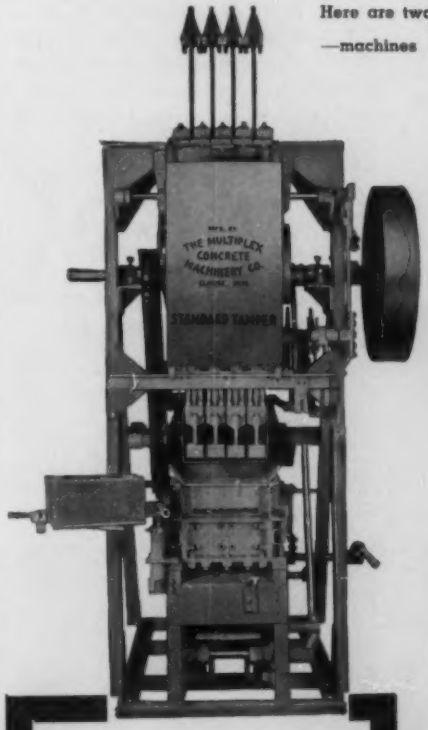
Ross[10] reports careful measurements on clay- and shale-bricks as ranging from 2.3 to 6.9, with an average close to 3.3.

Myers has made a study of the thermal expansion of portland ce-

*Second article of a series on this subject.

MORE PRODUCTION
MORE PROFITS
MORE SATISFACTION
With MULTIPLEX Concrete Machinery

Here are two star performers in the Multiplex line —machines that mean better business for you.



MULTIPLEX STANDARD TAMPER

The MULTIPLEX 8-bar Standard Tamper produces from three to four 8 x 8 x 16 in. units a minute. Time-feeding while tamping and hopper agitation make better units. Makes plain and stripper, or face blocks, on one base. Strike-off hopper assures a smooth top.

The Multiplex line includes Power Tampers, Power Presses, Hand Machines, Super Tampers, Mixers, Block Cars and Racks.

Complete plant installations—parts —repairs.

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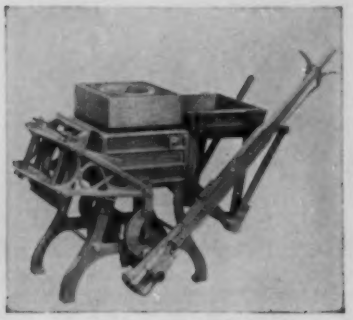


MODEL E FLUE BLOCK MACHINE—Makes 16 x 16 inch blocks. Includes all necessary attachments for ventilator and stone pipe openings.

MULTIPLEX CONCRETE MACHINERY
ELMORE, OHIO

ment.[8] The coefficient seemed to depend upon the amount and the wetness of the cement gel. He observed an increase to a maximum as the cement continued to hydrate, followed by a reduction as the gel gradually dried out. In concrete and in mortars the results depended upon the kind and amount of the aggregate, the storage conditions and the age. Average results up to two years for a 1:3 mortar (by weight) were 0.0000062. A neat mix of portland cement and lime, aged 9 months and well dried out, had a coefficient of 0.0000104, which was cut in two by soaking in water for one week. This last observation suggests one should pause before trying to add moisture effects directly to thermal effects.

Lightweight Aggregate

EL PASO BUILDING MATERIAL CO., El Paso, Texas, has been manufacturing rock wool, using volcanic cinders and limestone as a flux for melting in a vertical cupola. The volcanic cinders are found in Cinder Mountain located at Aden, New Mexico, in almost inexhaustible quantities. Aden, New Mexico, is about half-way between El Paso, Texas, and Deming, New Mexico.

More recently the company has shipped large quantities of the cinders to Phoenix, Ariz., where they are crushed and screened to minus 1-in. for use as a light-weight aggregate in concrete for roof slabs 4 in. thick. This poured concrete roof slab is used on several defense plant structures.

These cinders are said to be particularly desirable as a light weight concrete aggregate because the porous cinders have a high insulating value and also impart acoustical properties to the finished units. The cinders weigh approximately 1000 lb. per cu. yd. Coming from the mountain deposit, the cinders are about 90 percent minus 1-in., and the other 10 percent would range between 2-in. and 3-in. These cinders are free from sulphur or unburnt fuel.

The El Paso Building Material Co. is a lime producer and manufactures a "Klinker" brick made with lime and volcanic cinder aggregate. Clarence L. North is president of the company; Fred Maley is vice-president; and J. C. Edmondson is secretary-treasurer.

Chains Substituted for Manila Rope

IN AN ENDEAVOR to help users of smaller sizes of manila rope who may have remaining no usable rope or who are using rope which is unsafe, The Chain Institute, Inc., Chicago, Ill., has just completed a study of the proper substitution of weldless chains for manila ropes. The W.P.B. has sent out an urgent request for all manila rope that can be spared "if it is 3/16-in. or more in diameter and 200 ft. or more in length." The Government offered to pay 10 percent above the owner's net cost, exclusive of freight charges. A chart may be obtained to show the chain sizes and types which will meet the equivalent or better strength specifications of manila rope.

Represent Non-Metallic Minerals Transportation

R. J. LUND, chief, miscellaneous minerals branch, WPB, will be the government presiding officer of the advisory committee on Non-Metallic Minerals Transportation. Committee members are: Marlon Brando, traffic manager, Calcium Carbonate Co., Chicago, Ill.; Richard B. Carothers, president, H. C. Spinks Clay Co., Newport, Ky.; R. H. Frei, traffic manager, American Colloid Co., Chicago, Ill.; Donald Hagar, consulting ceramic engineer, W. H. Loomis Talc Co., Zanesville, Ohio; R. J. Newberry, traffic manager, Johns-Manville Corporation, New York, N. Y.; W. Wallace Roff, vice president, Southern California Minerals Corporation, New York, N. Y.; Robert F. Sherwood, vice president, United Feldspar & Milling Corporation, New York, N .Y.; Thomas C. Matthews, vice president, Pennsylvania Glass Sand Corporation, Lewistown, Pa.

Block Plant Fire

MAULE INDUSTRIES, INC., Miami, Fla., reported that a portion of its concrete block plant was destroyed by fire recently with a loss of about $25,000.

Discontinue

DUNN BUILDING PRODUCTS CO., Grand Rapids, Mich., has discontinued its concrete products business, according to Mrs. W. K. Watson, former treasurer of the company.

"ANCHOR"

Complete

EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straubiox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.

G. M. Friel, Mgr. COLUMBUS, OHIO

Left to right: Walter Manhardt, president of the National Concrete Masonry Association; Gene Olsen, president of Stearns Manufacturing Co.; and E. W. Dienhart, executive secretary of the National Concrete Masonry Association at the recent Army-Navy "E" celebration at the Stearns plant. Mr. Manhardt is also head of the Best Block Co., Milwaukee, Wis.

Washington Doings and Regulations

THE MILLS OF WASHINGTON grind rapidly and they grind an exceedingly large amount. It would be beyond the capacity of this entire issue of ROCK PRODUCTS to record *all* the rules and regulations of the past month or so designed to alter the lives and fortunes of our readers. These are only a few:

Price Laws Upheld

SUPREME COURT upheld the procedure fixed in the Emergency Price Control Act of 1942 whereby persons subject to regulation order or price schedule may protest or appeal first to the administrator and then to a special emergency court of appeals which is created under the act.

The Court upheld the right of Congress to confer on an emergency court, whose decisions are reviewable by the U. S. Supreme Court, equity jurisdiction to restrain enforcement of price orders and regulations. "There is nothing in the Constitution which requires Congress to confer equity jurisdiction on any particular inferior Federal Court," Chief Justice Stone said in the opinion.

The opinion also stated that since the merchants sought only to enjoin the enforcement of the price regulations, which the district court was without authority to act upon, there was no basis to determine now to what extent the merchants may challenge the constitutionality of the price law or regulations issued under the law in the courts other than the special emergency court.

Washington Guide Book

O.W.I., Handbook of War Agencies, obtainable from the Superintendent of Documents, Washington, D. C., for 20c per copy. If you have business to transact with the government it is a good investment. Includes telephone numbers.

Priority Ruling

W.P.B.: Priorities Regulation 18: Makes it impossible for a producer (or manufacturer) to use materials already approved for priority orders ("frozen"), even for orders with higher priority ratings, without specific permission of W.P.B., applies to Limitation Orders L-192 (construction machinery and equipment) and L-269 (mining equipment) as well as numerous other L orders.

What Is Scrap?

W.P.B. — 3519: To determine whether a piece of material or equipment should be used in its present form or put into war production in the form of scrap, the Special Projects Salvage Branch of the Salvage Division, W.P.B., is publishing, bimonthly, "Available Used Material and Equipment Bulletin."

This publication, providing a ready guide for scrap determination is distributed to approximately 3,000 government procurement offices and contractors, including the services and other war agencies such as Lend-Lease, Board of Economic Warfare, etc., covering most of the market for war uses. If any material or equipment listed in this bulletin can be put to use by these agencies, they contact the owner for purchase, and the listing is terminated. If the material or equipment has not been sold within a stipulated period (usually 60 days) after listing, the Regional Office of the War Production Board takes every possible step to move the material as scrap.

(Continued on page 112)

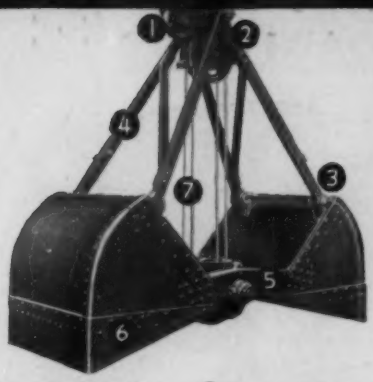
Steel
In Stock At
RYERSON

• Steel for every type of maintenance, construction, or manufacturing. Bars, Alloy Steels, Plates, Structurals, Sheets, Shafting, Hollow Drill Rod, Tubing, Stainless, Bolts, Babbitt, Rivets, Wire, Tool Steel, etc., over ten thousand different kinds, shapes and sizes ready for shipment from our nearest plant.

Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Detroit, Cleveland, Cincinnati, Buffalo, Boston, Philadelphia, Jersey City

SEVEN FACTS

IT WILL PAY YOU TO KNOW ABOUT BROWNHOIST BUCKETS



1. 5 to 22% larger sheaves lengthen rope life.
2. Underslung top block lowers center of gravity.
3. Extra large cover-bracket-bearings easily lubricated.
4. Well-braced, forged Ball Bars give extra strength.
5. Annealed cast steel closing arms increase digging efficiency.
6. Heavy carbon-steel sharpened digging lips (with or without teeth) provide efficient digging.
7. Cables last longer by being kept from contact with material.

Write today for complete catalog of Brownhoist rope reeve, power wheel, special purpose, open type grab, link-type buckets.

INDUSTRIAL BROWNHOIST

BAY CITY, MICH. • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO

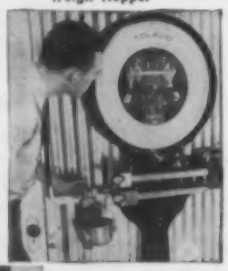
[SC]² PRECISION CONCRETE CONTROL

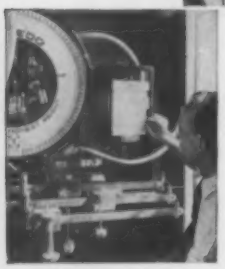
IMPROVES QUALITY
REDUCES COST

Attaches to your Weigh Hopper

Moisture Meter

The only unit capable of determining moisture content in ONE minute.





Compensator

Delivers correct DRY weight of aggregates and ADDED water. Makes a graph record of EVERY BATCH.

[SC] CONTROL produces remarkable uniformity. Is always approved by concrete engineers. Has definite sales value. Write for our booklet "PROFITS IN CONCRETE."

SCIENTIFIC CONCRETE SERVICE CORP.
McLachlen Bldg., Washington, D. C.

Pricing Primer

O.P.A. has undertaken to simplify M.P.R. No. 188 which includes Building Materials by issuing a "Pricing Primer." You can get a copy for the asking from O.P.A.

Talc Order Amended

W.P.B. Order M-239 is amended to remove existing restrictions on delivery and use of steatite talc for other than specified uses; establishes controls over production and grading of steatite talc; provides a system of inventory control based on maximum consumer stocks, and releases all frozen stocks of steatite talc purchased prior to October 13, 1942.

Approved O.P.A. Prices

O.P.A. Order 247 under M.P.R. 188: It is hereby ordered:

(a) The United States Gypsum Co. may sell, deliver or offer for sale, and any purchaser may receive or buy in the course of trade, K-Fac block insulation at the following prices, f. o. b. mill, with freight equalization with any producing point of 85 percent magnesia pipe and block insulation on sales to railroads and with full freight allowed on sales to other purchasers:

[Per sq. ft.]

Thickness	Distributors		Railroads		Jobbers		National industrials		All others	
	C/L	LCL	C/L	LCL	C/L	LCL	C/L	LCL	C/L	LCL
1"	.12	.126	.135	.135	.138	.15	.144	.15	.153	.165
1½"	.136	.142	.153	.153	.156	.17	.163	.17	.173	.187
1¾"	.152	.159	.171	.171	.174	.19	.182	.19	.193	.209
1⅞"	.168	.176	.189	.189	.193	.21	.201	.21	.214	.231
1⅞"	.18	.189	.202	.202	.207	.225	.216	.225	.229	.247
1⅞"	.196	.205	.220	.220	.225	.245	.235	.245	.249	.269
1⅞"	.212	.222	.238	.238	.243	.265	.254	.265	.27	.291
1⅞"	.228	.239	.256	.256	.262	.285	.273	.285	.29	.313
2"	.24	.252	.270	.270	.276	.30	.288	.30	.306	.33
2⅛"	.256	.268	.288	.288	.294	.32	.307	.32	.326	.352
2¼"	.272	.285	.306	.306	.312	.34	.326	.34	.346	.374
2⅜"	.288	.302	.324	.324	.331	.36	.345	.36	.367	.396
2½"	.30	.315	.337	.337	.345	.375	.36	.375	.382	.412
2⅝"	.316	.331	.355	.355	.363	.395	.379	.395	.402	.434
2¾"	.332	.348	.373	.373	.381	.415	.398	.415	.423	.456
2⅞"	.348	.365	.391	.391	.40	.435	.417	.435	.443	.478
3"	.36	.378	.405	.405	.414	.45	.432	.45	.459	.495

Avoid Time Losses on Hauling Jobs

by using

Brooks LOAD LUGGER

Features: Low headroom, simple construction, one-man control, and only 15 seconds for loading or dumping.

Idle trucks waiting to be loaded mean costly time losses on material moving jobs. You can eliminate this by mounting a Brooks LOAD LUGGER on the truck chassis and using several detachable dump buckets with each unit.

Then there is no waste "stand-by time." The LOAD LUGGER is on the go continually, picking up the buckets as fast as filled . . . hauling and dumping then returning the empties to handy loading points on the job. The time and labor saved will cut production costs 50% or more. Use this economy method in quarry operations, road building, feeding crushers and general hauling jobs. Write for Catalog No. 44.

806 Davenport Road Knoxville, Tennessee

Distributors in all Principal Cities

Brooks EQUIPMENT AND MFG. CO.

Building Permitted

W.P.B.-2970: Empowers Regional Offices to authorize the beginning of agricultural and many types of commercial construction costing less than $10,000. Agricultural construction covered by the procedure includes barns, silos, and other farm buildings, while commercial construction includes such buildings as stores, garages, laundries, office buildings, warehouses, and similar structures.

No application to a claimant agency for allotment of controlled materials is necessary for construction of this type. Under the procedure now set up, a simplified PD-200-c form applicable to these cases will be used. This form, which is an application for priority assistance or application to begin construction without priority assistance, requires submission of materials list.

In the case of non-war housing costing less than $10,000, the applicant must file PD-105 and PD-105A forms with the nearest Federal Housing Administration field office. These forms then come to W.P.B. Regional Offices with the recommendation of F.H.A. officials. The W.P.B. Regional Director assigns an allotment number and a preference rating on Form C.M.P.-L-127. Non-war

housing includes the so-called "hardship" cases, which arise as a result of homes being destroyed by fire, or where new homes are made necessary because of reasons of health or safety.

Maximum Prices for Agricultural Liming Materials

O.P.A.—T-846: Sellers of agricultural liming materials have been granted alternative methods of establishing maximum prices for sales to farmer consumers and to the Agricultural Adjustment Agency, which is the largest United States buyer of these products. The alternatives set up by the Office of Price Administration enable the sellers to recover a reasonable margin of return above current costs of production and distribution.

Maximum Price Regulation No. 386 (Agricultural Liming Materials, effective May 15, 1943, establishes f.o.b. plant prices for liming materials in bulk under a variety of optional pricing methods: These are:

1. The highest prices charged to each class of purchaser for the same or similar grade and kind of agricultural liming material during March or April, 1942.

2. The price at which a bid was submitted to, and an award was made by the Agricultural Adjustment Agency in accordance with Amendment No. 9 to Revised Supplementary Regulation No. 4, which established the method by which producers contracting with A.A.A. adjusted their maximum prices at figures that will cover production costs and at the same time, provide a reasonable margin of return. However, when this ceiling is used, in cases where a producer customarily has had different prices for different classes of purchases, such price differentials are to be maintained by adding or deducting the customary dollars-and-cents differential to or from the price quoted to A.A.A.

3. If the producer prefers, he may add to his base period (1941) price the difference between his production cost during that base period and his production cost for the period from November 1, 1942, to April 30, 1943.

The regulation also provides that when sellers of agricultural liming materials are required by contract with an agency of the United States Government, or any other buyer, to deliver the materials to the farmer-consumers' premises or to deliver and spread it on his land, the seller may add to the f.o.b. plant price his cost of transportation and of spreading, including the 3 per cent federal transportation tax. This delivered or delivered and spread price may be handled as a flat or averaged price for a whole county or township.

When liming materials are sold in bags, 25c per ton, plus the cost of the bags, may be added to the bulk price.

Sales of agricultural liming materials by retail dealers to consumers customarily have been on the basis of a small mark-up over cost. The dealer now is allowed to maintain this former mark-up by adding his increased material costs to his price ceilings.

Truckers performing a retail dealer's service may also charge their former mark-ups in addition to the transportation and spreading costs allowed for farmyard delivery. Higher production, transportation and spreading costs, unavoidable by either producers or dealers, made today's regulation necessary, O.P.A. says. During the last several years it has been the practice for A.A.A. to purchase a large proportion of its total requirements on the basis of a flat delivered price in an entire county or township. Consequently, a predominant part of the industry was frozen by the General Maximum Price Regulation on a delivered-price basis.

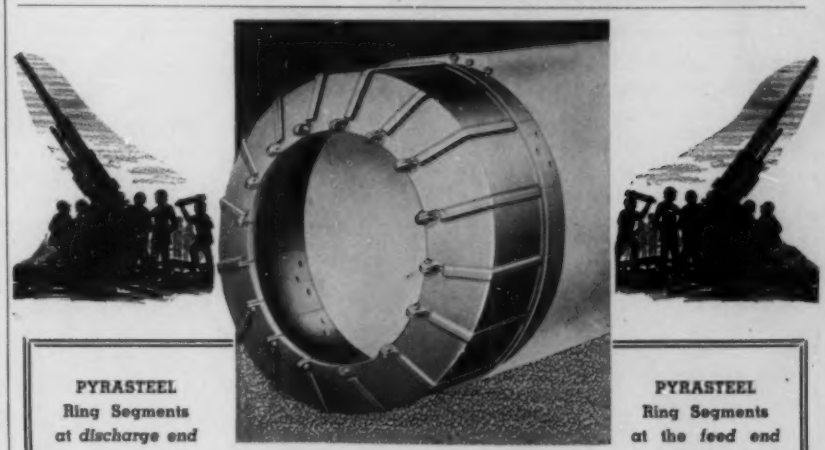
(Continued on page 115)

Made of Acid Open Hearth Steel Wire

Round Strand
Flattened Strand
Preformed
Steel Clad
Non-Rotating

The Service Record of this wire rope continues to make and hold friends.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
Established 1857
5909 Kennerly Avenue St. Louis, Mo.
New York — Chicago — Denver
San Francisco — Portland — Seattle



PYRASTEEL Ring Segments at *discharge end*

PYRASTEEL Ring Segments at the *feed end*

FEED END INSTALLATION

PYRASTEEL Protection at *both* ends

You can't afford to risk kiln-end "burnouts" that cause serious shut-downs and costly repairs. Remember that PYRASTEEL Kiln-Ends are available for both the *discharge and the feed ends* of your rotary kiln. They give continuous service at high temperatures, and outlast ordinary castings many times over . . . as proved in scores of installations where PYRASTEEL is giving satisfactory results. *Write for Bulletin of this* "Sure-Fire" heat-resisting alloy.

CHICAGO STEEL FOUNDRY COMPANY
PYRASTEEL for high temperatures
CHICAGO Makers of Alloy Steel for 30 Years
EVANSTEEL for strength

TO HIT 'EM H-A-R-D-E-R

THE year 1943 promises to be the grimmest, hardest year this country has ever faced. Every effort, and every dollar of national income not absolutely needed for existence, should go into war work and War Bonds.

In the Pay Roll Savings Plan, America finds a potent weapon for the winning of the war—and one of the soundest guarantees of the preservation of the American way of life!

Today about 30,000,000 wage earners, in 175,000 plants, are buying War Bonds at the rate of nearly half a billion dollars a month. *Great as this sum is, it is not enough!* For the more dollars made available now, the fewer the lives laid down on the bloody roads to Berlin and Tokio!

You've undoubtedly got a Pay Roll Savings Plan in your own plant. But how long is it since you last checked up on its progress? *If it now shows only about 10% of the gross payroll going into War Bonds, it needs jacking up!*

This is a *continuing* effort—and it needs *continual* attention and *continual* stimulation to get fullest results.

You can well afford to give this matter your close personal attention! The actual case histories of thousands of plants prove that the successful working out of a Pay Roll Savings Plan gives labor and management a common interest that almost inevitably results in better mutual understanding and better labor relations.

Minor misunderstandings and wage disputes become fewer. Production usually increases, and company spirit soars. And it goes without saying that workers with substantial savings are usually far more satisfied and more dependable.

And one thing more, these War Bonds are not only going to help win the war, they are also going to do much to close the dangerous inflationary gap, and help prevent post-war depression. The time and effort *you* now put in in selling War Bonds and teaching your workers to save, rather than to spend, will be richly repaid many times over—now and when the war is won.

You've done your bit Now do your best!

This space is a contribution to victory today and sound business tomorrow by ROCK PRODUCTS

Agstone Prices

(Continued from page 113)

These sellers were required to absorb increases in production and transportation costs, including the three per cent transportation tax imposed on December 1, 1942, by the Revenue Act of that year. The condition of the liming materials industry is such that being forced to absorb even as little as 5 or 6 cents per ton would seriously curtail production.

The application of liming materials to farm soil is particularly essential at this time when the nation is engaged in the production of huge quantities of food and feed products. Many kinds of farm soil are so strongly acid and deficient in calcium and magnesium that ordinary fertilizers used upon them may be totally wasted unless the ground is first well limed.

Cost of farm produce to the consumer will not be increased by the slightly increased ceiling prices granted today to liming materials producers, said O.P.A. An increase of as much as 30 cents per ton for agricultural lime would increase parity only twelve-thousands of one percent, while the continued or increased liming of farm soil will increase crop production per acre both as to quantity and quality, thus reducing the farmer's cost of production.

Once well limed, at the average of about a ton per acre, farm soil stays effectively limed for four or five years. This is because agricultural liming materials do not dissolve and wash through the earth as rapidly as do many fertilizer materials.

Conveying Equipment

W.P.B.—3489: Purchase orders for conveying machinery and mechanical power transmission equipment are restricted to those rated AA-5 or higher under the terms of General Limitation Order L-193 as amended recently by the War Production Board.

Other changes made in the amended order are:

Deletion of the provision requiring submittal of monthly production and delivery schedules for restricted orders, since scheduling is now covered by Scheduling Order M-293.

Clarification of the definition of conveying machinery by naming portable conveyors, now covered by Limitation Order L-287, as one of the items exempted; and by amending the definition of underground mining machinery, which is also an exempted item, to include slope conveyors.

(Continued on page 118)

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

...the Correct Rope for your equipment

made to meet the needs of

ROCK PRODUCTS OPERATORS

- PREformed
- Internally Lubricated
- Made from selected steels
- Made by craftsmen with years of experience

MACWHYTE COMPANY

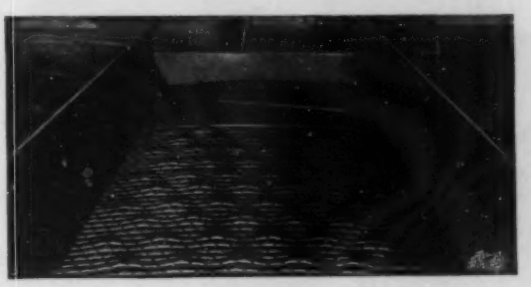
2949 Fourteenth Ave., Kenosha, Wis.

MILL DEPOTS: New York, Pittsburgh, Chicago Ft. Worth, Portland, Seattle, San Francisco

Distributors throughout the U. S. A.

BETTER SCREENING

and Longer Effective Screen Life with Hendrick Perforated Plate



Better screening comes directly from the fact that in Hendrick Perforated Plate you can get the exact type of perforation best suited to your needs. Full clearance reduces clogging to a minimum.

Longer effective screen life is assured by the use of Hendrick High Carbon Heat Treated Steel, which is so highly resistant to abrasion that the uniformity of the mesh is maintained under the heaviest service.

Write for your copy of "Perforated Plate for Vibrating and Shaking Screens."

HENDRICK MANUFACTURING CO.

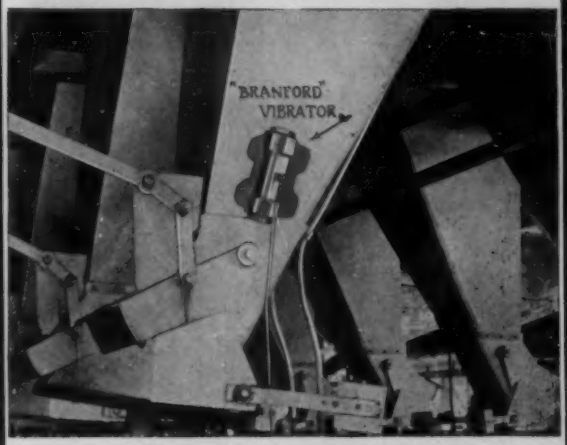
47 Dundaff St., Carbondale, Pa.

SALES OFFICES IN PRINCIPAL CITIES

PLEASE CONSULT TELEPHONE DIRECTORY

Makers of Elevator Buckets of all types. Mitco Open Steel Flooring. Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

"BRANFORD" PNEUMATIC VIBRATORS



If you are interested in increasing the efficiency of your material handling equipment, we suggest you write us for data on our Vibrators for use on Hoppers, Bins, Chutes, Concrete Buckets, Screening Devices or in any place where bridging over or hanging up of material occurs.

Prevents costly damage to equipment by sledging; cuts down labor costs and increases production.

We also manufacture *Vibrators* for *placing concrete*—Pipe Forms, Tanks, slabs, joists, etc.

NEW HAVEN VIBRATOR CO.

145 CHESTNUT ST. NEW HAVEN, CONN.

FINANCIAL NOTES

RECENT DIVIDENDS

Alpha Portland Cement Co.	$ .25	June	25
Basic Refractories, Inc.	.10	June	15
Bessemer Limestone & Cement Co. pfd.	.75	July	1
Lehigh Portland Cement Co. 4% pfd.	1.00	July	1
Pennsylvania-Dixie Cement Corp. $7 pfd. A (np) (arrears)	.50	June	15
United States Gypsum Co.	.50	July	1
United States Gypsum Co. 7% pfd.	1.75	July	1

•

AMERICAN LIME & STONE Co., Bellefonte, Penn., subsidiary of the Warner Co., reported a net profit of $27,319 for the year ended December 31, 1942, after all charges, as compared with $44,124 in 1941. Sales for 1942 totaled $1,807,958 as against $1,504,500 in 1941.

•

BLUE DIAMOND CORPORATION, Los Angeles, Calif., showed a net profit of $262,008 in 1942 as against $413,271 in 1941. Net sales in 1942 were $7,362,683 as compared with $5,384,598 in 1941. During 1942, the company expended $209,138 in improvements, extensions and replacements.

•

MONOLITH PORTLAND MIDWEST Co., Los Angeles, Calif., reported a net profit of $121,856, after charges, for the year ended December 31, 1942, as compared with $156,039 in 1941.

•

CALAVERAS CEMENT Co., San Francisco, Calif., reported a net income of $226,939, after all charges, for the year ended December 31, 1942. This compares with a net profit of $204,248 in 1941. Net sales were up 5 percent over 1941.

•

DOLESE & SHEPARD Co., Chicago, Ill., showed a net profit of $30,269, after charges and taxes, for the year ended December 31, 1942. This compares with $29,431 in 1941. President W. J. Lynch pointed out in his annual report that while the market for commercial stone has fallen off sharply, flux stone is being produced in volume and agricultural stone has amounted to between 10 and 15 percent of the total production and is increasing at improved prices.

•

LONE STAR CEMENT CORPORATION, New York, N. Y., had a net profit of $681,369 for the first quarter of 1943 as against $708,368 for the same period in 1942. Sales in the first quarter of 1943 totaled $7,251,363 as compared with $7,354,126 for the first three months of 1942.

•

LEHIGH PORTLAND CEMENT Co., Allentown, Penn., had the following income account for the year ended December 31:

	1942	1941
Net sales	$25,306,918	$22,370,241
Cost of sales	14,122,137	12,658,713
Depreciation and depletion	1,792,256	1,752,493
Selling, etc., exp.	2,858,560	2,979,900
Operating profit	6,533,965	4,979,135
Other income	246,867	224,933
Total income	6,780,832	5,204,068
Annuities purch.	87,093	248,749
Fed. income tax	1,028,000	1,180,000
Excess prof. tax	3,722,000	1,530,000
Post-war tax cred.	cr 336,800	.....
Net income	2,280,539	2,245,319
Preferred div.	226,964	226,994
Common div.	1,089,300	1,463,726
Surplus for year	964,275	554,599
Surplus, Jan. 1	11,161,534	10,606,935
Surplus, Dec. 31	12,125,809	11,161,534

•

BOSTON SAND & GRAVEL Co., Boston, Mass., showed a net profit of $78,003 for the year ended December 31, 1942, after taxes and charges. This compared with $107,646 the calendar year 1941.

All Wisconsin Air-Cooled Engines are equipped with an exceptionally rugged, oversize crankshaft (as compared with other engines of comparable size)...drop-forged for maximum molecular compactness and ability to withstand the terrific pounding to which this vital unit is subjected in heavy-duty service.

Because the burden of heavy-duty engine operation falls on the crankshaft, we feel that no crankshaft can be made "too good". We build them as good as we know how.

MOST POWER Per POUND

WISCONSIN MOTOR Corporation
MILWAUKEE, WISCONSIN, U. S. A.
World's Largest Builders of Heavy-Duty Air-Cooled Engines

NOW- MORE THAN EVER BEFORE.....

It is necessary to install equipment with long life built into its construction. Simplicity Gyrating Screens have a proven record of long life, made during the past seventeen years of operation in 1,500 different plants.

In addition, we maintain the very efficient Parts and Service Department of our company, ready at all times to provide the proper maintenance needed today to keep your equipment operating at top efficiency.

SIMPLICITY ENGINEERING CO.
DURAND - - - - MICHIGAN

PACIFIC PORTLAND CEMENT CO., San Francisco, Calif., had a net income of $772,425, after all charges, for the calendar year 1942 as against $511,250 in 1941. Net sales of $7,004,882 in 1942 were the largest in its history, comparing with $5,412,841 in 1941. All three cement plants at Redwood City and San Juan Bautista, Calif., and Gold Hill, Ore., were in production, and the gypsum plant at Redwood City, Calif., was placed in production in 1942.

•

WASHINGTON BRICK, LIME AND SEWER PIPE CO. has reported through Eric A. Johnston, trustee, that since July 20, 1933, when he took over control, all indebtedness has been paid, $148,152 has been spent on plant rehabilitation and improvements, and $120,384 in cash has been accumulated. At the time Mr. Johnston became trustee, the company was $130,000 in default as to all payments of principal and interest on its bank loans.

•

NORTH AMERICAN CEMENT CORPORATION, New York, N. Y., reports for the 12 months ended March 31, 1943, a net loss of $133,278 after taxes, depreciation, depletion and interest but before profit on bonds purchased, comparing with a net profit of $185,238 for the 12 months ended March 31, 1942.

•

UNITED STATES GYPSUM CO., Chicago, Ill., had a net profit of $1,048,342 for the first three months of 1943. This compares with $1,141,894 for a like period in 1942.

•

NATIONAL GYPSUM CO., Buffalo, N. Y., reported a net profit of $179,283 for the first three months of 1943, after charges and taxes, as compared to $173,362 for a like period in 1942. Net sales for the first quarter in 1943 were $4,788,229 as against $4,806,218 the same period in 1942.

Grand Rapids Tax Case

NATIONAL SAND AND GRAVEL ASSOCIATION has released a bulletin with the briefs, findings of fact, and opinion in the Grand Rapids Gravel Co. case. It has been held by the District court for the western district of Michigan, Southern Division, that the owner-drivers of trucks used by the Grand Rapids Gravel Company are employes and not independent contractors within the meaning of the Social Security Act. The decision of the court is not a finding that all owner-drivers are employes and not independent contractors, and the determination of whether a given owner-driver is a contractor or an employe can be reached only after examining the relationship between the parties. In the Grand Rapids case it was brought out that in addition to hauling materials, the truck-owners did other work such as stockpiling. The company also carried Workmen's Compensation Insurance policies on the owner-drivers, and the drivers viewed themselves as employes of the company.

Sand-Lime Brick Production and Shipments

FIVE active sand-lime block and brick plants reported for April and seven for March, statistics for which were published in May, 1943.

AVERAGE PRICE FOR APRIL

	Plant Price	Delivered Price
Detroit, Mich.	....	$16.00
Saginaw, Mich.	$13.00	....
Grand Rapids, Mich.	....	15.00
Seattle, Wash.	16.50	18.50
Mishawaka, Ind.	13.00	....

STATISTICS FOR MARCH AND APRIL

	*March	†April
Production	631,000	‡822,500
Shipments (rail)	20,000	150,000
Shipments (truck)	1,389,690	913,500
Stock on Hand	519,930	319,930
Unfilled Orders	1,535,000	930,000

‡25,000 sand-lime brick.
5,000 cement block.

†Five plants reporting: incomplete, one not reporting stock on hand and one not reporting unfilled orders.

*Seven plants reporting: incomplete, two not reporting stock on hand and five not reporting unfilled orders.

SMOOTH
EFFICIENT
CONTROLLED
OPERATION

A SECO vibrating screen does not vibrate your structure

Screen Equipment Co.

. . . . For Greatest Efficiency Use Specialized Shovel and Crane Equipment

TRADE MARK
KEYSTONE
REGISTERED U. S. PATENT OFFICE

Offers Dependable Excavators Precisely Adapted to Your Needs

1-Yard Excavator

1¼-Yard Shovel

For maximum speed and efficiency on your excavating be sure you are using the right size and type shovel. KEYSTONE offers two sizes, sturdily built, to fit your needs. Model 19-A, 1¼-yd. shovel and crane for excavating and quarry clean-up. Model 18-A, 1-yd. excavator for special service—It is fitted with a 1-yd. skimmer for sand-strata separation and recovery, trench-hoes for crevice cleaning upon serrated rock strata, etc. Our many years of experience in solving excavating problems assure you of getting the right Rock Shovels—Dippers—Back Hoes—Skimmers—Drag Lines—Cranes—for use under your conditions.

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KNOX MANUFACTURING CO.

818 CHERRY ST., PHILA., PA.

Since 1911 Producers of

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Valves-Couplings-Nipples-Clamps-Hendorg

Washington Doings and Regulations

(Continued from page 115)

Suspension Order

W.P.B. Suspension Order S-307: Little River Sand and Gravel Development, Shreveport, La., is ordered not to directly or indirectly order, purchase or accept delivery or in any manner secure or use material or construction plant to continue or complete construction of any boat, now being built, except as specifically ordered by the W.P.B.

The difficulty arose from the Kansas City Southern Railway Company extending a A-1-j priority to the gravel producer for its product (which procedure is O.K.). But the gravel producer extended this priority rating to get materials for a new steel barge and tugboat, to be used in transporting the gravel (which is against the rules).

Apparently, if the producer had applied in the prescribed manner (through the Mining Machinery Division of W.P.B.) he would have been able to get the necessary priority, for the W.P.B. considers production of railway ballast a war essential activity. Therefore, the order merely tells the gravel producer the right way to proceed, rather than penalizes him.

Cuts in Allotments

W.P.B.—3405: A continuing demand for materials outrunning the available supply was reflected in the third quarter allotments of Controlled Materials just completed by the Requirements Committee, it was announced by War Production Board Chairman Donald M. Nelson.

The allotments of controlled materials have been made to the fourteen claimant agencies representing military and civilian requirements, lend-lease, and other exports.

Total requests from claimant agencies amounted to more than 20,000,000 tons of carbon steel, while the estimated supply in the third quarter is slightly under 15,000,000 tons. The allotments of carbon steel made by the Requirements Committee are slightly above the estimated supply, to assure full use of all available materials and to create a pressure for reduction of inventories to an absolute minimum.

The requests of the Army, Navy, Aircraft Resources Control Office and the Maritime Commission for carbon steel, taken together, were reduced by about 18 percent in the allotments made by the Requirements Committee. All other requests, including these for export, were reduced about 27 percent.

Construction Stop Orders

W.P.B.—3465: Where construction projects are halted through the issuance by the War Production Board of revocation or stop orders, contractors will be advised in the future to contact redistribution officials of the appropriate regional office in regard to disposal of material purchased for projects which have been halted.

The Redistribution Division of W.P.B. will assist contractors in disposing of material and equipment made available as the result of the issuance of revocation or stop orders.

A paragraph embodying this suggestion to contractors will be added to revocation orders issued in the future.

Price Increase Denied

O.P.A. Order 335 under M.P.R. 188: Olympic Portland Cement Co., Seattle, Wash.; order issued by the San Francisco Regional Office, O.P.A., January 7, 1943, denying petition for an adjustment of maximum prices for limestone affirmed and petition denied.

P-56 Amended

W.P.B. Preference Rating Order P-56 as amended May 5, 1943: A paragraph (g-1) added: *"Emergency procedure.* In case of actual or impending breakdown, application for priorities assistance may be made on form PD-333 or by telegraph, and may be made either to the Washington office, or the nearest regional or district office of the War production Board."

Price of Feldspar

O.P.A. Order No. 7 under M.P.R. 327: Colorado Feldspar Co., Cañon City, Colo., may sell or deliver and any person may buy or receive glassmaker grades of ground feldspar at prices not in excess of $7.00 per ton, f.o.b. Cañon City.

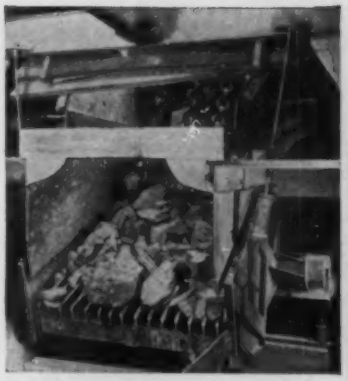
Silica Prices

O.P.A.—Amendment 1 to Order A-1 under M.P.R. 188: (a) (2) Modification of prices for silica sand. (i) The maximum price for the sale of silica sand produced in the State of Tennessee shall be $2.00 per net ton, f.o.b., producers' plant. (ii) For the purpose of this subparagraph (2) the term "silica sand" means a fine dry quartz sand, white in color, practically free from clay-like materials

(Continued on page 120)

CONTROLLED FEEDING

Wherever the feed to crushers, grinding mills, grizzlies, dryers, belt conveyors, etc., must be controlled . . . Jeffrey-Traylor electric vibrating feeders will provide the ultimate in operating flexibility and dependability. Capacities from few ounces up to 1500 tons per hour in heavy duty types.



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935-99 North Fourth Street, Columbus, Ohio

Jeffrey-Traylor 5 ft. wide grizzly feeder (above) controlling feed and by-passing fines ahead of primary crusher.

●

Jeffrey-Traylor 5 ft. wide feeder (left) handling run of quarry material from skip hoist hopper to crusher in large cement plant.

Catalog No. 750-N

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The rigid head in Blaw-Knox Buckets preserves fixed cable alignment between upper and lower sheaves, avoiding cable wear caused by loose or wobbly head construction.

All four corner bars are mounted directly on the head pin, thus all impact or pounding action between the head and scoop structure is transmitted directly and not through bolts or rivets.

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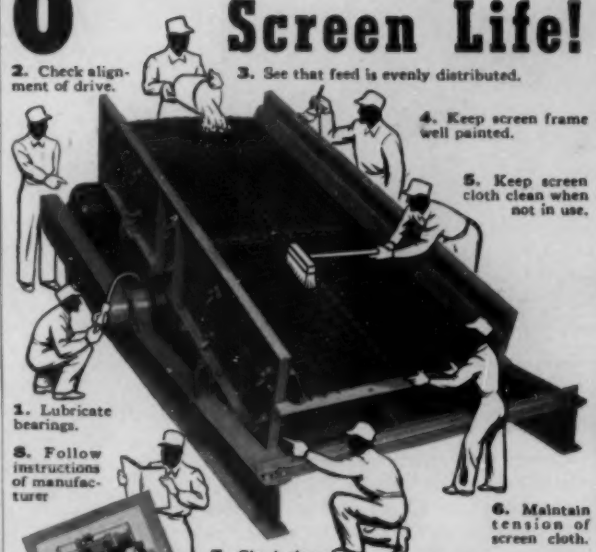
BUCKETS

8 Ways to Prolong Screen Life!



2. Check alignment of drive.
3. See that feed is evenly distributed.
4. Keep screen frame well painted.
5. Keep screen cloth clean when not in use.
1. Lubricate bearings.
8. Follow instructions of manufacturer
6. Maintain tension of screen cloth.
7. Check clearances between moving and stationary parts.

For information on new Link-Belt screens, write us today.

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2045 W. Hunting Park Ave., Philadelphia
Offices and distributors in all principal cities.

9177

WRITE TODAY! ***LINK-BELT*** **Vibrating Screens**

Washington Doings

(Continued from page 118)

and other impurities, and having not less than 98.5 percent silica. Effective, April 16, 1943.

Portable Conveyor Restrictions

W.P.B.—3412: Production and delivery of portable conveyors used to move bulk materials are strictly controlled under the provisions of the recently issued General Limitation Order L-287. The order restricts acceptance or delivery of portable conveyors or parts to those covered by approved purchase orders. An "approved order" is a purchase order bearing a preference rating of AA-5 or higher if placed with or accepted by a manufacturer or dealer on or after May 10, 1943, or an A-1-c or higher rating if before that date. Purchase orders for the armed forces or other government agencies specifically named in L-287 automatically become approved orders. After June 9, 1943, no person shall manufacture, deliver or accept the delivery of any portable conveyor or parts, unless manufactured in accordance with specifications and restrictions on the use of materials as prescribed in Schedule A attached to L-287. Restrictions on orders for repair and maintenance parts do not apply to any order of such parts for the necessary maintenance or repair of any portable conveyor in an amount not exceeding $300 for any single portable conveyor.

Mica Prices

O.P.A. Order No. 1 under M.P.R. 347: The maximum price for any built-up mica product sold or delivered by the Mica Co. of Canada (N. Y.) Inc., Massena, N. Y., shall be a price computed by taking the current list price of the Mica Co. of Canada (N. Y.) Inc. for that product and deducting therefrom at least the respective discount set forth in the following table:

Material and Quantity	Discount Percent
India mica plate: Milled moulding (No. 1); unmilled moulding (No. 3); commutator (No. 2); for flat work (No. 4):	
Less than 10 pounds	20
10 to 99 pounds	25
100 to 1,999 pounds	35
2,000 pounds and over	42
Amber mica commutator plate (No. 5):	
Less than 10 pounds	30
10 to 99 pounds	37
100 to 1,999 pounds	40
2,000 pounds and over	43
India mica plate for flat work (No. 8) (not made under $\frac{1}{16}$-in.):	
Less than 10 pounds	12
10 to 99 pounds	15
100 pounds and over	26
Flexible mica plate (No. 7):	
Less than 10 pounds	Net
10 to 99 pounds	5
100 pounds and over	17
Mica paper (No. 9):	
Less than 10 pounds	5
10 to 99 pounds	11
100 pounds and over	23
Mica cloth (No. 10):	
Less than 10 pounds	10
10 to 99 pounds	15
100 lbs. and over	28
Red rope paper and mica (No. 11):	
Less than 10 pounds	Net
10 to 99 pounds	5
100 pounds and over	16
Fish paper and mica (No. 12):	
Less than 10 pounds	Net
10 to 99 pounds	5
100 pounds and over	17
Mica tape (No. 13):	
Less than 10 pounds	Plus 25
10 to 99 pounds	Plus 15
100 pounds and over	Less 6
India mica heater plate (No. 14-X):	
Less than 10 pounds	25
10 to 99 pounds	32
100 pounds and over	44
Amber mica heater plate (No. 15):	
Less than 10 pounds	22
10 to 99 pounds	30
100 pounds and over	42
All mica and 98% round mica tubing:	
Under 25 feet	15
25 feet and over	35
85% round mica tubing:	
Under 25 feet	20
25 feet and over	40
50% round mica tubing, and mica and asbestos tubing:	
Under 25 feet	35
25 feet and over	54
Mica commutator rings:	
Under 1 in. diameter:	
Less than 1,000	Plus 19
1,000 to 49,999	List
50,000 and over	Less 15
1-in. diam. to under 3-in.:	
Less than 1,000	20
1,000 to 49,999	40
50,000 to 99,999	47
100,000 and over	57
3-in. diam. to under 7-in.:	
Less than 25	20
25 and over	35
7-in. diam. and over:	
Any quantity	42

Above discounts apply only to quantities ordered for shipment at one time. Various sizes may be aggregated to secure maximum discounts.

(b) Maximum cutting charges for mica bushings shall be as set forth in the following table:

Size	Charge per Thousand
$\frac{1}{32}$-in. wall or less	$2.50
Over $\frac{1}{32}$ to $\frac{1}{16}$-in., inclusive	5.00
Over $\frac{1}{16}$ to $\frac{1}{8}$-in., inclusive	5.50
Over $\frac{1}{8}$ to $\frac{1}{4}$-in., inclusive	6.00
Over $\frac{1}{4}$ to $\frac{3}{8}$-in., inclusive	6.50
Over $\frac{3}{8}$ to $\frac{1}{2}$-in., inclusive	7.00

(c) Maximum stripping charges shall be as shown in the following table:

	Charge per Pound Net
5-in. wide and over	No cutting charge
3-in. wide to 4$\frac{63}{64}$-in. wide	5 cents
1-in. wide to 2$\frac{63}{64}$-in. wide	10 cents
Less than 1-in. wide	15 cents

(d) This Order No. 1 may be revoked or amended by the Price Administrator at any time.

(e) This Order No. 1 shall become effective April 28, 1943.

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

EARLE C. BACON, Inc.

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THE ROSS FEEDER

Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

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Canadian Licensee: E. Long, Ltd., Orillia, Ontario

GRUENDLER CRAFTSMANSHIP

Employed by U. S. A. in the WAR EFFORT

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PORTABLE CRUSHERS

Proper Size Aggregates . . . on the Job

Balanced, Non-Tipping. Expertly designed to meet your exact requirements in proper size aggregates—larger capacity and quick mobility to and from job.

Four Wheel Maintenance JAW CRUSHER with Power Unit

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On the job to help you in any way, NOW and for your Post War Plans. Blue Prints or Practical Suggestions sent—No obligation.

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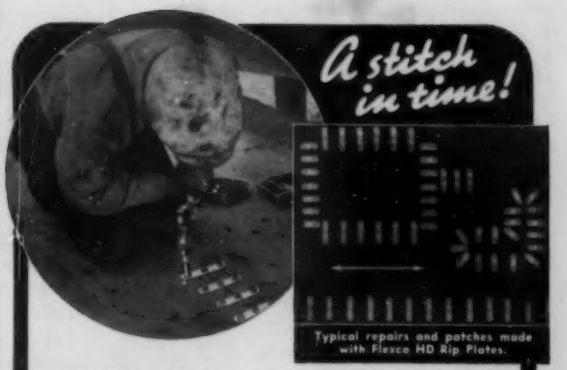

Typical repairs and patches made with Flexco HD Rip Plates.

THOUSANDS of men in industrial plants, mines and mills all over the country are doing just what this man is doing. They are cutting costs by repairing conveyor belts with Flexco HD Rip Plates.

WRITE TODAY FOR BULLETIN F-100 that shows how easy it is to repair rips, to strengthen soft spots and to put in patches by using Flexco HD rip plates. The bulletin also shows how to make tight butt joints in both conveyor and elevator belts with Flexco HD Belt Fasteners. These fasteners are made in six sizes. Furnished in special analysis steel for general use and in various alloys to meet special conditions.

Flexco HD Rip Plate

Flexco HD Belt Fastener

FLEXIBLE STEEL LACING CO.

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FLEXCO HD BELT FASTENERS

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Uniform Separation

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of cement, lime and any other finely ground metallic or non-metallic material within a range of 80 to 400 mesh.

- **Greater Capacity**
- **Cleaner Tailings**
- **99% Through 325 Mesh**
- **25% to 30% greater recovery of fines**
- **Not affected by variation in speed or rate of feed**

Manufacturers also of "Reliance" Crushers, Screen, Elevators, conveyors, Bin Gates, Grizzlies. Complete crushing, screening and washing plants for crushed stone, sand and gravel.

Universal Road Machinery Co.

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Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal

FACTORY & LABORATORY, KINGSTON, N. Y.

Built for One Purpose . . . to Produce Profitably

There are three reasons why successful plant operators say it's profitable to use AMERICAN CRUSHERS.

1. **DEPENDABILITY**—rugged design, simple construction, finest materials, keep AMERICANS on the job longer without breakdowns or maintenance.
2. **UNIFORMITY**—produces carefully graded aggregates and stone sand, minimum fines with no slivers or chips.
3. **PERFORMANCE**—AMERICANS produce more volume with sustained uniform production and variety of products at greater profit.

Write for complete catalog

AMERICAN PULVERIZER CO.

1245 MACKLIND AVE. ST. LOUIS, MO.

OBITUARIES

ALBERT L. AUSTIN, sales engineer of Robins Conveyors, Inc., Passaic, N. J., passed away recently. Mr. Austin joined the Mead-Morrison Mfg. Co. as draftsman in 1915. When Robins took over the coal and ore handling products of Mead-Morrison in 1934, Mr. Austin became a Robins sales engineer covering an extensive Eastern and Southern territory on projects of a specialized nature.

•

MARTIN OLIVER LEHR, assistant superintendent of the Fogelsville plant of Lehigh Portland Cement Co., Allentown, Penn., died recently at the age of 55. Mr. Lehr had been with the company since 1906. For 15 years prior to becoming assistant superintendent he had been general foreman.

•

C. H. STUTZ, traffic manager, National Cement Co., Birmingham, Ala., died recently at the age of 51, following a short illness.

•

ANDREW C. MCCORMICK, general sales manager, Medusa Portland Cement Co., Cleveland, Ohio, passed away recently at the age of 57, while attending the annual banquet of general office employes at the Cleveland Hotel.

•

CHARLES C. CLAUSON, president, Everett Lime Co., Bellingham, Wash., was killed recently by a premature explosion of a powder charge at a limestone quarry near Granite Falls. Mr. Clauson also had an interest in the Mitchell Bay Lime Co., which has a quarry on Boulder creek between Maple Falls and Glacier.

•

R. MARSHALL, advertising agency executive of Detroit, Mich., long identified with the Stearns Manufacturing Co., Adrian, Mich., passed away recently. Mr. Marshall was well known to many concrete products producers as he was a regular attendant at conventions of the National Concrete Masonry Association.

•

EZEKIEL DAVIDSON, managing director of the Pretoria Portland Cement Co., Johannesburg, South Africa, until his retirement a year ago, died recently at the age of 70. Mr. Davidson was born and spent his early years in Cleveland, Ohio. A graduate in chemical engineering from Case School of Applied Science, he received his master's degree in engineering from Heidelberg University, Germany, in 1896. On completing his studies he took a position as head chemical engineer with the Diamond Portland Cement Co., Middlebranch, Ohio. Seven years later he took his executive position with the Pretoria Portland Cement Co. in Johannesburg. In recent years Mr. Davidson had assisted the South African government in the transportation of the country's agricultural produce abroad. During his residence in Johannesburg, he has made frequent trips back to Cleveland to visit relatives and friends.

•

H. ALLISON WEBSTER, well known in all phosphate mining, fertilizer manufacturing and chemical circles for the past 40 years, died recently of a heart attack at the age of 67. Mr. Webster and Mr. Schuler of Alabama organized the Peerless Chemical Co., Columbia, Tenn., and built the superphosphate plant south of the city where one of the largest mines of the Armour Fertilizer Co. is now located. He selected most of the phosphate properties now owned and operated by the Monsanto Chemical Co. and his son, H. Allison Webster, Jr., is now mining supervisor for that company. Without any college training Mr. Webster became one of the high-class chemists and engineers in the

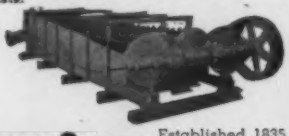
McLANAHAN EQUIPMENT

CRUSHERS

Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

SCREENS

Complete portable, semi-portable and stationary crushing, screening, and washing plants for different capacities of any materials.



McLanahan & Stone Corp. Established 1835 HOLLIDAYSBURG, PENNSYLVANIA

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WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

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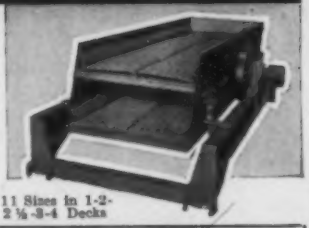
Violent vibration for fast, positive separation all over the screen—controlled by accurately balanced design for smooth action. Long life, low maintenance costs. No choking. Fast delivery. Tell us your needs. Write for Bulletin D42V.



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ready to "go on the line" in a new Cement plant designed for top efficiency in every Department.

- Major crushing by smashing impact
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are some of the outstanding advantages which this REVERSIBLE Hammermill will provide in the Secondary Preparation for modern Raw Side Grinding Mills.

Send for Bulletin No. 1050, and PUT YOUR REDUCTION PROBLEMS UP TO US.

PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Bldg.
PHILADELPHIA, PA.

Tennessee area. He was interested with J. J. Gray, Jr., in development of the ferro-phosphate patents developed at the blast furnace at Rockdale, now owned by the Tennessee Products Corp.

•

CHARLES C. PECK, manager and part owner of the former Stewart-Peck Sand and Material Co., Kansas City, Mo., until his retirement in 1916, passed away recently at the age of 87. Mr. Peck was born in Rockville, Ind. When he was 2 years old the family moved to Gardner, Kan., and later to Olathe, where Mr. Peck attended a commercial college. For several years he was district manager for the Aurora, Ill., office of the Western Wheel Scraper Co. In 1902 he and his brother, Frank C. Peck purchased an interest in the sand company which is now the Peck-Woolf Sand and Material Co.

•

MRS. ALICE M. TYLER, wife of F. E. Tyler, president of the Dewey Portland Cement Co., Kansas City, Mo., died recently. Born in Sackets Harbor, N. Y., about 70 years ago, she had made her home in Kansas City for the past 30 years. She is survived by her husband and two children, a daughter, Mrs. Gaynel Tyler Capen of Davenport, Iowa, and a son, W. E. Tyler, of Kansas City.

•

RICHARD G. MINCKE, owner and operator of the Mincke Monolithic Products Co., St. Louis, Mo., was killed recently, and the business is being dissolved.

•

WILLIAM H. METSON of San Francisco, Calif., who operated a gravel, limestone and sodium sulphate plant in Rhodes, Nev., passed away recently.

•

HENRY R. BEEBE, formerly associated with H. V. Owens in Eastern Rock Products, Inc., Utica, N. Y., and known to many old-timers in the crushed stone industry, died recently at the age of 64.

•

E. N. VIDAL, head of the concrete and metals laboratories of the U. S. Bureau of Reclamation, died recently at the age of 58. Mr. Vidal was particularly well known in the field of concrete technology and had served the Bureau for 18 years.

•

NATHAN F. COBB, of Rockland, Me., retired, long associated in the lime industry and formerly employed with Francis Cobb & Co., the Cobb Lime Co., and the Rockland and Rockport Lime Co., passed away recently at the age of 82.

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour — Finenesses: 20 to 350 mesh

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ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

***Use the* BRADLEY AIR SEPARATOR**

What rate per hour? What weight per day?

The Feedoweight Gives the Answer

Feeding, proportioning and batching—entirely automatic. The result—finished products of uniform quality with minimum manufacturing costs. The FEEDOWEIGHT correctly and uniformly feeds material by weight. In addition, an automatic totalizer will give you the exact total weight of all material so fed. It is a machine of unexcelled accuracy. Eliminate guesswork in your plant.

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MANGANESE STEEL CASTINGS

for PULVERIZERS CRUSHERS ROLLS SCREENS

for SHOVELS DREDGES CRANES CONVEYORS

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Established 1881 — CARLISLE, PA.

Record Tonnages in Screening Rock, Gravel & Ores Throughout the World

TY-ROCK

SCREEN

Full Floating Circle-Throw Action for Coarse and Medium Sizes

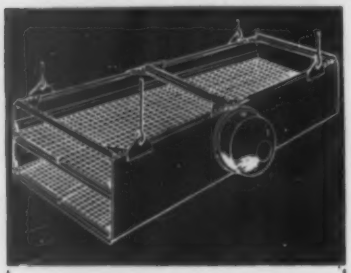
Write for Catalog No. 65

THE W. S. TYLER COMPANY CLEVELAND, OHIO

SAMUEL J. WATSON, owner and operator of the South Euclid Stone and Supply Co., South Euclid, Ohio, died recently at the age of 65.

•

JOSEPH MUIR LANG, founder of the Phosphate Mining Co., Savannah, Ga., passed away recently at the age of 82. Born in Kenniel, Linlithgow, Scotland, Mr. Lang came to the United States in 1881, arriving in Savannah in 1885, where he opened a brokerage business in fertilizer materials under the name of J. M. Land and Co. This company went out of business in 1924. In 1906 he founded and organized the Phosphate Mining Co., large miners of Florida pebble phosphate rock. He was vice-president of the company until his retirement from active work several years ago. For 30 years Mr. Lang was president and treasurer of the Marion Phosphate Co., owners of Florida hardrock phosphate and timber lands.



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5 DISTINCTIVE FEATURES . . .

1. Full Floating Shaft.
2. Eight Positive Stroke Adjustments (quickly changed).
3. Oil Lubricated.
4. Sturdy Construction.
5. Screen Cloth Easily Changed.

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Productive Equipment Corp.

2926-28 West Lake St., Chicago, Ill.

Manufacturers' News

Traylor Engineering & Manufacturing Co., Allentown, Penn., was awarded the Army-Navy "E" pennant for high achievement in the production of war equipment in imposing ceremonies held at the plant. Lieutenant Commander John R. Craig read the official Army-Navy "E" citation and introduced Sergeant Vincent Toomey, a flight engineer in a Flying Fortress, who was wounded in a bombing mission over Rotterdam. He presented the lapel insignia to Mr. Traylor, Mr. Roberts and the two Traylor employes with the oldest service records, Charles H. Patten and Harvey V. A. Ihrie. Otho M. Graves, president of the General Crushed Stone Co., Easton, Penn., was master of ceremonies.

Army-Navy "E" Award Presentation Ceremony at Traylor Plant

Nordberg Mfg. Co., Milwaukee, Wis., has been awarded the Maritime "M" Burgee and the Victory Fleet Flag for having achieved unusual merit in producing equipment essential to the successful performance of the Victory Fleet. The Maritime Merit Badge was presented to every employee as a badge of individual merit.

Universal Engineering Corp., Cedar Rapids, Iowa, has received the Army-Navy "E" Award for excellence in war production

John A. Roebling's Sons Co., Trenton, N. J., announces the establishment of a separate department to serve the aircraft industry, to be known as the Aircord Division. Forest S. Burtch, formerly assistant chief engineer, wire rope engineering department, will be manager of the new division.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has elected Leigh Willard a member of the board of directors to fill the vacancy left by the death of Max W. Babb. Mr. Willard is also president and director of the Interlake Iron Corp., and a director of the American Iron and Steel Institute. All other Allis-Chalmers directors were re-elected.

The B. F. Goodrich Co., Akron, Ohio, announces the appointment of Chester F. Conner as merchandise manager; Jay E. Miller as sales promotion manager, and Harold P. Mosher as manager of special industrial merchandise.

Gar Wood Industries, Inc., Detroit, Mich., has appointed A. C. Berg manager of the road machinery division, according to G. A. Bassett, president. Mr. Berg, who joined the company in 1919, became assistant manager of the road machinery division when the division became a part of Gar Wood Industries, Inc., in 1934. R. S. Headley has been appointed assistant manager to Mr. Berg. The Gar Wood Road Machinery Division, engaged 100 per cent in war work, is the largest producer of road machinery in Michigan.

Parsons Engineering Corp., Cleveland, Ohio, has announced that Axel S. Hellstrom, formerly associated with the Broden Construction Co., subsidiary of the Wean Engineering Corp., is now a member of its staff.

Athey Truss Wheel Co., Chicago, Ill., has promoted Claude E. Matthews to the position of supervisor of service and parts. Mr. Matthews has been with the company since 1937 when he started as a factory serviceman. He is a native of Colorado and attended the University of Colorado as a student in mechanical engineering. For six years he was associated with the Consumer's Company of Chicago where he gained a wide knowledge in maintenance engineering work. He then served for a year with U. S. Engineers as an inspector in dredging work in the Great Lakes.

SAUERMAN
Long Range
MACHINES

Handle MORE Tons for LESS Money

Almost any pit or bank excavating or stockpiling job can be simplified by using a SAUERMAN Drag Scraper or Cableway.

These machines dig, haul and dump in one economical straight-line operation and are adaptable to a variety of conditions and requirements.

Because they require but a single operator, consume little power in operation, and are easy to keep in good running order, they cut costs to the bone.

Write for Catalog

SAUERMAN BROS., INC.

530 S. Clinton St. Chicago

Sullivan Machinery Co., Spokane, Wash., has engaged Ernest E. Eddy as sales engineer.

Gates Rubber Co., Mobile, Ala., has employed Milner H. Hawkins as field engineer. Previously he was associated with the U. S. Steel Corp., Madison, Wis.

Climax Engineering Co., Clinton, Iowa, has been awarded the coveted Army-Navy "E" pennant in recognition of high achievement in the production of war equipment. This is the first "E" Award to be made in Clinton.

The Cooper-Bessemer Corp., Mt. Vernon, Ohio, has elected Gordon Lefebvre to the office of president and general manager. He succeeds B. B. Williams, former president of the company, who will continue his duties as chairman of the board.

The B. F. Goodrich Co., Akron, Ohio, has appointed Grover D. Motherwell as manager of the Minneapolis district, succeeding Arthur J. Martin, who died recently.

Bristol Co., Waterbury, Conn., has announced the appointment of George R. Atkins as manager of their branch sales office and factory in Akron, Ohio. Mr. Atkins attended Northeastern University, where he majored in Chemical Engineering and was graduated in 1928. He joined the Bristol Co. sales organization in 1929.

Hercules Powder Co., Wilmington, Del., announces that it will open sales offices in Boston for its Cellulose Products, Naval Stores, Synthetics, Explosives and Paper Makers Chemical departments. Homer C. Simmons, who is now at Stoneham, Mass., will head the Cellulose Products Department. Howard C. Bates will be in charge of Synthetics Department sales; W. M. Williams, the newly-appointed resident manager of the Paper Makers Chemical Department's plant at Stoneham, will head the Industrial Chemical Division sales group of that department; G. J. Rising, former resident manager at Stoneham, will be transferred to the Hercules office in Pittsburgh, Penn., where he will represent the Industrial Chemical Division.

Athey Truss Wheel Co., Chicago, Ill., announces that Ben F. Lease, formerly manager of service and research, has been made domestic sales manager.

Jaeger-Lembo Machine Corp., Corona, N. Y., has formed a new corporation, to be known as the Jaeger-Lembo Machine Corp. of New Jersey, with headquarters at 20 Branford Place, Newark, N. J. Joseph C. Lembo is president of the new corporation and Nelson S. Franks is the New Jersey representative.

Reeves Pulley Co., Columbus, Ind., reports that R. X. Raymond will become the direct representative of the company at Minneapolis, Minn. He will be located in the Fawkes Building.

The Thomas Laughlin Co., Boston, Mass., has received the coveted Army-Navy "E" award for outstanding production of wire rope and chain fittings for ships of the Navy and Merchant Marine.

Farrel-Birmingham Co., Inc., Ansonia, Conn., has been awarded a third All-Navy "E" pennant. Each of the company's three plants is now privileged to fly the Navy "E" burgee with two white stars added.

Claude B. Schneible Co., Chicago, Ill., announces that C. C. Hermann has been appointed general manager and L. C. Beers has been made sales manager.

Caterpillar Tractor Co., Peoria, Ill., has received the Army-Navy "E" award for outstanding production in the war effort.

The Associated Business Papers, New York, N. Y., announces the removal of its offices to the Bartholomew Building, 205 E. 42nd Street.

Taylor-Wharton Iron and Steel Co., High Bridge, N. J., announces the award of the company's 50-year medal to L. N. Aller, secretary-treasurer, which brings to 15 the number of men now living who have been employed by the company for 50 years or more.

Independent Pneumatic Tool Co., Chicago, Ill., reports the election of Neil C. Hurley, Jr., as executive vice-president; John A. McGuire as secretary, and E. R. Wyler as vice-president, with headquarters in New York City. All other directors and officers were re-elected.

SKF Industries, Inc., Philadelphia, Pa., has made the following changes in its executive staff: Thomas W. Dinlocker is now vice-president and treasurer; Richard H. DeMott, vice-president in charge of sales, and C. P. Collins, secretary. William L. Batt, vice-chairman of the War Production Board, retains the presidency, and S. F. Wollmar is executive vice-president.

The Association of National Advertisers has moved its new offices to 285 Madison Avenue, New York, N. Y.

New Incorporations

The Hildebrand Lime Co., Astoria, Wash., has been incorporated with a capital of $9000. Incorporators are August, Frank and Arthur Hildebrand.

T. Colletti Sand & Gravel Corp., Queens, N. Y., has been organized to deal in building materials, etc., with a capital of $10,000. Angelo M. Ferri, 25-06 31st., Long Island City, is the agent.

Southern Metals, Inc., Little Rock, Ark., has been organized with a capital of $15,000. Clarence Claymon is the agent.

New Brunswick Concrete Works, Inc., New Brunswick, N. J., has been incorporated with a capital of $100,000. Herman Levin is the agent.

PERFORATED METAL
SAND AND GRAVEL SCREENS
Manufactured exactly to your specifications
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices
CHICAGO PERFORATING CO.
2437 West 24th Place
CHICAGO, ILLINOIS
Canal 1459

WILFLEY
centrifugal SAND PUMPS
for Slurries, Sand Tailings Slimes, Acid Sludges

Save Pumping Cost
Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*
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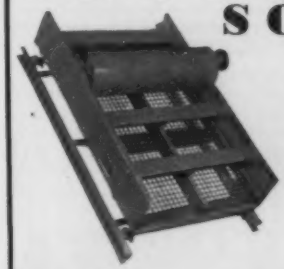
and
"UNIVIBE" RIDDLES

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Tried, Proved and Guaranteed Vibrating Screens. Since 1919, the BEST in screening equipment at the LOWEST COST.
NEW! 32-page Catalog on Screens and Screening. Just ask for Catalog No. 107.
UNIVERSAL VIBRATING SCREEN CO.
RACINE - - WISCONSIN

New and Rebuilt Equipment
KILNS, COOLERS, DRYERS, CRUSHERS, TUBE MILLS, CRANES, ETC.
MOTORS, GENERATORS AND ELECTRICAL EQUIPMENT
Inquiries invited. Consult us regarding your equipment problems. For prompt action, wire or phone.
WEBBER EQUIPMENT CO.
17 EAST 45TH STREET NEW YORK
Phone MUrray Hill 2-6511-2-3

Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

FOR SALE

TEAM UP FOR VICTORY with "CONSOLIDATED"

BALL AND TUBE MILLS

2—UNUSED 7'x23'9" Tube Mills, Iron lined, each including 400 H.P., 3/60/2200 v. slip ring motor and starting equipment.

1—5'6x21' Smidth Tube Mill, iron lined.

2—5'x28' Bonnot Tube Mills, silex lined, cast steel heads for direct gear drive.

DIRECT HEAT ROTARY DRYERS

2—4'x30' Ruggles-Coles, now at Rochester, N. Y.

1—5'6x24' Iroquois, made by Lancaster Iron Works, at Newark, N. J.

1—5'x30' Cummer. Now at Newark, N. J.

2—6'x50' Traylor Eng. & Mfg. Co.

4—5'x40' Ruggles-Coles, single shell. Now at Boston.

RAYMOND PULVERIZERS

3—4 roll low side Mills, each with fan, cyclone, interconnecting piping.

1—5 roll high side type, with "whizzer" separator and everything complete, including motors, steel supports, etc.

HARDINGE CONICAL BALL MILLS

1—4'6x16" Iron lined, with A.C. motor and silent chain drive.

1—6'x22" Iron lined, with silent chain drive, with or without motor.

ROTARY KILNS

2—8'x125' Vulcan Iron Works.

1—7' & 8'x80' Traylor.

4—5'6x7'x80' Vulcan and Reeves.

1—5'x50' Vulcan.

CRUSHING ROLLS

1—20"x14" Sturtevant, full balanced type.

1—Set 36"x16" Sturtevant.

2—40"x16" Colorado Iron Works.

1—42"x16" Allis-Chalmers.

WASTE HEAT BOILER PLANT

4—750 H.P. Edgemoor Waste Heat Boilers, all ASME, last insured for 200 lbs. working pressure. Including super-heaters, economizers, fuel fans, boiler feed pumps, steel stacks, feed water heater, etc. All in one installation and in good operating condition.

FOR 25 YEARS A SYMBOL OF CONFIDENCE

CONSOLIDATED PRODUCTS COMPANY, INC.
15-16-17 PARK ROW NEW YORK, N. Y.
Shops and Yard at Newark, N. J., cover eight acres.

BELT CONVEYORS IN STOCK

12"—14"—16"—18"
20"—24"—30"—36"

ALSO

CONVEYOR BELTING

1943 Catalog No. 44 on Request

"The test of time since '99"

TEUSCHER PULLEY & BELTING CO. 801 N. 2nd ST., ST. LOUIS, MO.

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 20" Superior McCully. Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 6C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.

JAW TYPE: Traylor 60x84, 42x65, 42x48, 24x72. Superior 84x86 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 15x36.

REDUC. TYPE: Kennedy Nos. 25, 37 & 40. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 13". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.

ROLLS: Allis-C. 13½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 30x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.

HAMMERMILLS: Williams No. 1, 2, 3, 4, 8 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40., Etc.

MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x36' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller-Lehigh, Etc., Etc.

CRUSHING PLANTS: No. 65 Diamond No. 21 Pioneer 8x24. 1000 Good Roads, 9x40 Austin-Western, 9x36 C.B.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

ALEXANDER T. McLEOD
7229 Roger's Avenue CHICAGO

3—12-ton Whitcomb Locos., 36" gauge. (One can be changed to std. gauge.)
Bucyrus-Erie Gas-Air Shovel-Crane, 1¼ Yd.
27-E Smith Paver Boom and Bucket.
Sullivan Turbinair Hoist, 2000 lbs.
50 HP Locomotive Boiler, Nat. Bd.
15 Yd. Steel Bin, 2 compartment.
Barnes 4" Gas Self-Pr. Pump.
Shovel Attach for 41-B Bucy.-Erie.
Front Drum, Erie B or B-2.
Fairleads Byers 1¼ Yd. Dragline.
4—1 Yd. Union Rd. Shaft-Buckets.
½ and 1 Yd. Tipover Buckets.
Gard.-Denver Compressor, 630 A. Air, Elec. Dr.
5—Electric Hoists, 40, 50 and 60 HP.

J. T. WALSH
Brisbane Bldg. Buffalo, New York

ITEMS FOR SALE
at
BERGEN BUILDING BLOCK, INC.
Industrial Ave., Ridgefield Park, N. J.
(Tel. Hackensack 3-1090)

1—½ ton Electric Hoist, Robbins & Meyer, with ¼ cu. yd. Bucket.....$225.00
1—Tumbling Barrel or Star Mill made by Whiting Foundry Equipment Co., 3 ft. dia., 5 ft. long, gear driven $350.00
1—3 ft. x 6 ft. Deister Double Deck Screen, Serial 202, Model B, with 1½ h.p. Motor....$375.00
1—Skinner Bros. Industrial Hot Air Heating Unit with Blower.....$150.00
1—Anchor Tamp Machine. Five drop...$450.00
3—Anchor Tamp Machines. Four drop, each $450.00
1—Anchor Backup Attachment.....$ 75.00
1—Oilfield Gas Fired Boiler, 5 h.p., Style O, No. AH10490 .....$175.00
10—Silo Hoops, 9 ft. diameter, each.....$ 5.00
3—14 cu. ft. Blystone Mixers, each.....$275.00
1—16 cu. ft. Measuring Hopper with Track $350.00
4—Multiplex Hand Machines.....each $ 25.00

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your Inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

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EQUIPMENT CORPORATION of AMERICA

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4

USED and REBUILT EQUIPMENT

TO SPEED YOUR PRODUCTION — AVAILABLE NOW!

BOILERS

1 15 H.P. Upright high pressure Orr & Sembower Boiler with Grate and Hood.

BULLDOZERS

1 No. 30 Caterpillar bulldozer with straight blade.
1 Allis-Chalmers Model KO Diesel with Baker Straight Blade.
1 Allis-Chalmers Model "M" with Bulldozer Blade and Hough High Lift—1941.

COMPRESSORS

1 100 cu. ft. Chicago Pneumatic Portable Compressor Gas Engine driven, Solid Rubber Tires, Serial No. 19647.
1 110 cu. ft. Ingersoll Portable Compressor. Mounted on steel truck with Pneumatic Tires. Serial No. PP90766. Driven by 4-cyl. Waukesha Gasoline Motor Type V143F.

CONVEYORS

1 16" Troughing Belt Conveyor 12'-6" long on steel frame with drive and motor bracket over belt. No motor.
1 16" Troughing Belt Conveyor 7'-6" centers on steel frame. Rebuilt. No drive, 6" dia. head and tail pulleys.
1 24" x 44' Centers Barber Green Stationary Conveyor, with new belt and 5 H.P. Motor.
1 18" x 21' Centers Link-Belt Stationary Conveyor mounted on steel frame. Troughing belt, complete with drive.
1 14" Flat Belt Conveyor 26'-6" Centers. Mounted on Steel Frame. With new 14" 4-ply Conveyor Belt.
1 18" x 37' Conveyor on Steel Frame.
1 14" Belt Conveyor 8' long troughing idlers, plain bearings. Wood lagged pulleys. Wood frame. With new Belt.

CRANES

1 Northwestern No. 105 Crane, 55' boom with Clam. Shovel 1¼ -yd. cap., with ⅝ -yd. Clam. Digging bucket 4-cyl. Twin City Gasoline Tractor Motor.
1 10-Wheel Truck Crane complete with ½ -yd. Universal Crane with 24' Boom and Clam Shell.
1 Brownhoist Crawler Crane with 40' Boom, Serial 10366, Gasoline Engine Powered. ¾ -yd., 21-ton.

GYRATORY CRUSHERS

1 6" Traylor Bulldog Gyratory Crusher.
1 No. 57 Kennedy Reduction Crusher with Synchronous Motor, 50 H.P., 257 R.P.M., 440-Volt, complete with Starting Equipment including Motor Generator set for excitation.
1 No. 40 Telsmith Reduction Crusher.
1 No. 10A Telsmith Primary Breaker.
1 8" Traylor Gyratory Crusher.
1 No. 10B Telsmith primary Crusher No. 1033, Special Concaves for fine crushing.

HAMMER CRUSHERS

1 No. 4 Williams plain bearing hammer mill.
1 No. 101A Stover Pulverizer. Late type with ball bearings.
1 No. 15 Williams Pulverizer. Sleeve Bearing.
1 Portable Hammer Mill Feed Grinder, including 16" Dellinger Hammer Mill, late style, driven by 6DT468 Buda Diesel Engine. Above with 1¼ -ton Molasses tank, all attachments. Mounted on 1937 International truck, long wheel base.

JAW CRUSHERS

1 7" x 12" New Holland Crusher on Steel Truck.
1 9" x 36" Wheeling Jaw Crusher.
1 36" x 10" Type "D" Farrel Reduction Crusher.
1 13" x 24" Type "B" Farrel Jaw Crusher.
1 24 x 36 Farrel Jaw Crusher 15B.
1 8" x 36" Acme Reduction Jaw Crusher.
1 No. 20 22" x 50" Good Roads Jaw Crusher.
1 6" x 12" Good Roads Jaw Crusher.
1 No. 6 Champion Jaw Crusher.
1 11" x 22" Telsmith Jaw Reduction Crusher.
1 No. 4 Champion Jaw Crusher.
1 10" x 20" Case Portable Jaw Crusher with collapsible elevator mounted on steel truck.

ROLL CRUSHERS

1 10 x 16 Double set New Holland Crusher Rolls.
1 10 x 16 Double Set New Holland Roll Crushers.
1 10" x 12" New Holland 2-roll Crusher.
1 16 x 16 New Holland Roll Crusher.
1 **Complete Crushing Plant:**
1—No. 6 Champion Jaw Crusher.
1—50' Centers Inclined Elevator with 18" x 12" x 9 ½ " No. 10 Ga. buckets mounted on double strand chain. Wood frame.
1—36" x 20' Allis-Chalmers Revolving Screen. Bevel Gear Drive. Trunnion one end, stub shaft on other end.
1—125 H.P. slip ring motor, 690 R.P.M., 3-60-220 V. Complete With Controls.
1—15-ton Fairbanks Truck Scales.

DERRICK

1 15-ton Guy Derrick with 70' lattice-type boom and 80' lattice-type mast.

ELEVATORS

1 70' Centers Inclined Bucket Elevator. Wood Frame, Buckets 26' x 12" x 10" x ¼ ". Mounted on double strand of 6" pitch manganese chain.
1 26' Centers Inclined Bucket Elevator. Buckets 18" x 10" x 8" Ga. Steel. On Single Strand of 5" Pitch Chain.
1 No. 4 Telsmith Belt Elevator 49' Centers. Steel Frame.
1 No. 4 Telsmith Belt Elevator 55'-6" Centers. Buckets 13" x 11 ½ " x 11 ½ " x 7 ½ " No. 12 ga. with 15" Belt.
1 40' Centers Jeffrey Inclined Bucket Elevator. 26 x 12 x 17 ½ buckets with 8S class steel roller chain on wood frame, buckets of ⅜ material and reinforced lip.
1 30' Centers Inclined Bucket Elevator. Buckets 36" x 17 ½ " x 15" x ¼ " Mounted on double strand of 6" Pitch Manganese Chain. Wood Frame.

ENGINES

1 6D415 Buda Diesel Power Unit. Approx. 80 H.P. at 1450.
1 PD40 International 4-cyl. complete with Twin Disc Clutch and Outboard Bearing and Radiator. Serial No. PDC2394.
1 4DT212 Buda Diesel Complete with Starter-battery and all necessary equipment. Approx. 52 H.P. at 1800 R.P.M.
1 4DT226 Buda Diesel complete with starter-clutch-hood-battery.
1 K428 Buda 81 H.P. Gasoline Motor complete with self-starter and radiator. New block and Pistons.
1 1020 International Power Unit 4-cyl. Gasoline Engine.
1 6DT317 Buda Diesel Complete and Rebuilt (Serial 5540).
1 6DT468 Buda Diesel Complete and Rebuilt (Serial No. 4567).
New Buda Diesel Engines Available, Models 317, 389, 468. Priority rating required. Write for detailed information and bulletins.

GATES (BIN)

2 24 x 24 Clam Type, all steel bin gates. 18" high, Overall Width 30".

IDLERS

10 18"—3 Roll Troughing Idlers with 6 x 6 Pulleys mounted on Wood Sills—Plain Bearing.
20 30" New Link-Belt 3 Roller Troughing Idlers with Anti Friction 6" Rollers.
39 30" Used Robins 3-roller Troughing Idlers with Anti Friction 6" Rollers.
9 Used Robins 3-roller Cradle Assemblies same as above but have no rollers.
12 Used Robins 3-roller Cradle Assemblies same as above but have no rollers.

BOTTOM ROLLERS FOR CONVEYORS

11 New Link-Belt Bottom Rollers 5" dia. x 33" wide plain rollers without brackets or frame.
10 Bottom Roller Assemblies (4 rollers ea.) 6" dia. x 32" wide—whith of brackets 38".
17 New Rollers for two preceding items—6" dia. x 4 ¼ " wide. 1⅜" Dia. Hub.

LOCOMOTIVES

1 7-Ton Plymouth, 30" gauge track. 4-cyl Clymox Motor.

MIXER

1 Jaeger Speed King. Type 7-S Trailer Mixer. Model 7DL Serial No. 52272. 2 solid rubber tires—LeRoi engine.
1 Dodge truck, 1 ½ -ton, complete with Jaeger 2-yd. Mixer with Hercules engine.

MOTORS

1 5 H.P. General Electric KT 1750 R.P.M. 1⅛ shaft ¼ KW 3-60-220 v.
1 5 H.P. General Electric KO 1750 R.P.M. 1⅛ shaft ⅜ KW 3-60-220 v.
1 10 H.P. Westinghouse CCL 1120 R.P.M. 3-60-220. 1⅛ x ⅝ KW.
1 10 H.P. Continental ball bearing 1150 R.P.M. 3-60-220 v. 1⅛ shaft ⅝ KW.
1 5 H.P. General Electric KT 946 1150 R.P.M. 3-60-220 v. 1⅛ x ⅝ .
3 25 H.P. Fairbanks-Morse Type B squirrel cage, 1160 R.P.M. 3-60-220, sleeve bearing.
1 40 H.P. Allis-Chalmers slip ring motor, 1160 R.P.M. 3-60-220 v. type ARY220C with magnetic starting equipment. Pulley 8" dia. x 10" face, motor has adjustable base.
1 20 H.P. Western Electric 3-60-220 v. motor, 1150 R.P.M., type KT312.
1 50 H.P. Westinghouse CW slip ring 690 R.P.M., 220 v., 3 ph., 60 cycle, frame 752C.
1 25 H.P. GE motor 3 ph., 60 cyc., 220 v., speed 1750 R.P.M.
2 35 H.P. Fairbanks-Morse type B squirrel cage, 870 R.P.M., 3-60-220 v., sleeve bearing.
1 35 H.P. General Electric Type I Form K Squirrel Cage, 870 R.P.M., 3-60-440 v., with sliding base, sleeve bearing.
1 35 H.P. Fairbanks-Morse type B Squirrel Cage, 1160 R.P.M., 3-60-220 v. Sleeve bearing.
1 40 H.P. Westinghouse type CW Slip Ring Frame 656c, 690 R.P.M., 3 ph., 60 cyc., 220 v.
1 3 H.P. Westinghouse type CS motors, type 93A, 3450 speed, 3 ph., 60 cyc., 220 v.
1 75 H.P. General Electric slip ring motor, 3 ph., type MT 356, 870 R.P.M., 220 v.
1 100 H.P. Westinghouse slip ring motor, 3 ph., 440 v. type CW868A, 690 R.P.M. with slide rails.
1 35 H.P. Western Electric slip ring motor, 220 v., 1150 R.P.M.

PULLEYS

10 9 ¾ " P.D. 9-C Groove V-Belt Pulley 2⅝ bore.
12 50" P.D. 9-C Groove V-Belt Pulley 2⅞" bore.
1 30" dia. x 36" belt conveyor pulley with 2⅞ shaft.
2 20" dia. x 42" belt conveyor pulley with 2⅞ shaft.
1 30" P.D. 8-C Groove V-Belt Pulley 2⅞" bore.
1 18" dia. x 30" Belt Conveyor Pulley 3⅞" bore.
1 84 x 15 Cast Iron Solid 3⅞ bore.
1 64 x 12 Cast Iron Solid 3⅞ bore.

PULVERIZERS

1 No. 16 New Holland Limestone Pulverizer.

PUMPS

1 Worthington 1 ½ " D8 Centrifugal pump direct connected to 1 H.P. Master 3 ph., 220/440 v., 3425 speed motor, style 27611 type PA.
1 2 H.P. Peerless, 3 ph., 60 cyc., 220 v. direct connected 1¼ x 1 Westco cent. pump mounted on solid base.
1 DeLaval 4" cent. pump serial No. 29183, Type P4, total head 90', speed 1740 R.P.M., cap. 350 G.P.M. Direct connected to 15 H.P. Westinghouse C. S. 361F 3-60-220/440 v.
1 Triplex pump size 4" x 4", belt driven with tight and loose pulley.
1 Rex 4" self-priming cent. pump direct connected to 4-cyl. air cooled Wisconsin engine mounted on steel wheels.
1 Humdinger Pump Fig. 700-4, serial No. 1679. Powered by 2-cyl. LeRoi Gasoline Motor direct connected to 4" cent. pump mounted on steel truck.
1 Lake Wood Triplex road pump direct connected to 4-cyl. Waukesha gasoline power unit. Pump model No. 35, cyl. size 3 ⅛ " x 6".

ROLLERS

1 10-ton Huber Gasoline 3-wheel front roller, 37 ⅛ " face, 42" dia. Rear Roller 20" face, 64" dia. Serial No. 20741. Air operated scarifier, single cyl. air compressor. Sterns 4-cyl. gas motor.
1 10-Ton Huber 3-wheel front roller 37 ⅛ " face, 42" dia. Rear rollers 20" face, 64" dia. Serial No. 2487, with air operated scarifier. Worthington single cyl. air compressor with Waukesha 4-cyl. gas motor.
1 8-ton Wehr, 3-wheel roller.
1 5-ton Buffalo Springfield 3-wheel roller, model VM-16, Pneumatic Operated scarifier, 8-ft. fine grade scraper. Front wheels 36" wide, 31" dia. Rear Wheels 48" dia., 18" wide. Powered by 4-cyl. Waukesha Gasoline Engine.

SAND TANKS

2 No. 6 Telsmith Sand Tanks.

SCALES

1 15-ton Howe truck scales. Platform size 9' x 18'.
1 50-ton Fairbanks truck scales. Size of platform 22' long, approx. 9' wide, serial No. E262192, main beam weight 120,000 lbs., M480.

SCOOPS

1 Large Tractor Dirt Scoop on Wheels.
2 Heil Scoops 12-yd. capacity.

SCRUBBER

1 48" x 72" Link-Belt Revolving Sand and Gravel Scrubber with Bevel Gear Drive.

SCREENS (REVOLVING)

2 40" dia. Revolving Screens 18' long. Driven by trunnion wheels. 5 H.P. 1200 speed, 3-60-220 v. General Electric motor.
1 33" x 12' Revolving Screen. Stub Shaft, one end; trunnion one end. Bevel gear drive.
1 36" x 16' Good Roads Revolving Screen.

SCREEN (SCRUBBER)

1 Telsmith Rotary Scrubber Screen 32" dia. barrel 14'-6" long including scrubber section 4'-6" long. Bevel Gear Drive. Trunnions on intake end.

SCREENS (VIBRATING)

1 Good Roads 2-deck Vibrating screen 36 x 72.
1 Summit 2-deck vibrating screen size 5' x 8'.

SHOVELS

1 Model 27 Lorraine ½ -yd. Serial No. 2282 V8 Gasoline Motor, cable crowd.
1 ⅝ -yd. Michigan Shovel Model AU. Serial No. 121.
1 ⅝ -yd. Shovel Attachment for P. & H. Shovel
1 ½ -yd. Thew Shovel Combination, gas, 25' Crane. Model No. 35.
1 ½ -yd. P. & H. Shovel. Serial No. 5771.
1 ⅝ -yd. Austin Combination Shovel and 30' Crane Boom with Air Controls.
1 ¾ -yd. Thew Combination Shovel and Crane with Fairleads and 45' Crane Boom. New Manganese Shovel Bucket. Serial No. 3066, 4-cyl. Waukesha Gasoline Engine.
1 1 ¼ -yd. Lorraine Shovel Model 75A, Serial No. 3348.
1 ½ -cu. yd. back hoe bucket for Byers Shovel. Shop No. D483, 42" wide over side teeth.
1 40' Crane Boom.
1 ½ -yd. Bay City Shovel Bucket.
1 ⅝ -yd. Erie Clam Shell Bucket. Reconditioned.
1 1-yd. Page Drag Line Bucket.
1 16" Keystone Backhoe Bucket only with dipper stick.

SPEED REDUCERS

1 Foote Brothers Herringbone Speed Reducer. Type 8 S.H. ratio 2.57 to 1.

TRAILER

1 Kingham 35' 9-ton pole trailer with Pneumatic Tires and Pneumatic Brakes. Model BC 30, rated capacity 3-ton. Serial No. 12236.

TRUCKS

1 1 ½ -ton Chevrolet Flat Body Truck.
1 AC Mack Truck With Flat Body 18' x 8', 1932 on Pneumatic Tires. Serial No. 4AC1CM1196, Motor No. BC4207.

SAND WASHER

1 Twin Screw Sand Washer. Steel Box 144" x 38" x ¼ " thick. Screws 14" dia.

WAGON

1 18-cu. yd. LaPlante Choat Rubber Tired Bottom Dump Wagon.

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25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
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2 Yd. Marion Steam Shovel.
¾ Yd., 1½ Yd., 2 Yd. & 4 Yd. MARION Electrics.
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9—50 ton std. ga. heavy duty flat cars.
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Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.
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75, 90, 180, 200 HP. F. M. Engines.
110 HP Ingersol Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.
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6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.
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RAYMOND 4 & 5 ROLL MILLS & 5 ft. Chaser M.
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116 Ton Blaw Knox 2 Compt.
400 BARREL CEMENT BIN
400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.
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JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x3, 20x6, 20x10, 20x12, 28x12, 30x15, 30x15, 36x15, 36x30, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x24, 48x36, 60x42, 84x60, 36x16, 9x36.
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4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
3—Traylor T-12 Bulldog Gyratory, also 16 inch 8 in. Traylor T. Gyratory.
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10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
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100 K.W. RIDGWAY 3/60/2200-250-275 volt.
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200 K.W.RIDGWAY 3/60/2200-250-275v.,900 rpm.
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52HP, GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 HP.GEN.ELEC. 3/60/440v..900-1200 rpm.
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36 In.x20 Ft.,3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x30 Ft., 42 In.x24 Ft., 5 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft. 6 Ft.x60 Ft., 6 Ft.x20 Ft., 6 Ft.x70Ft., 10x20, 7½x100&8x110 Ft. Kilns.
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STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom,25 Ton 100 Ft.Boom,75 Ton 135 Ft.Boom.
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GASOLINE: 3 Ton,5 Ton,8 Ton,12.14,and 30 Ton.
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VIBRATING: 2x4, 3x6, 12x5, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12. 1, 2 & 3 Deck.
HUMMER ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x32, 6x20.

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1—⅝ Yd. Model 204 P. & H. Shovel, Serial No. 2362.

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Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

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1—18" x 45' Link Belt stationary conveyor, troughing belt type, elect. or gas power.
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1—14" x 25' Farquar portable scoop conveyor, gas power.

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1—No. 4 Champion jaw crusher, size 9x15", Ser. No. 2606.
1—No. 2 Climax jaw crusher, size 9x16".
1—Buchanan jaw crusher, size 10x16".
1—Acme jaw crusher, Ser. No. 1873, size 12x20".
1—Acme jaw crusher, Ser. No. 1686, size 9x16".
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24".
1—Allis Chalmers, No. 5 gyratory crusher, Ser. No. 5331, opening 10x38".
1—Austin No. 5 gyratory crusher, Ser. No. 2945, opening 12x35½".

DERRICKS
3—Steel guy derricks; 1—20-ton American-Terry 90' mast, 110' boom; 1—5-ton Terry guy derrick, 70' mast, 60' boom; 1—5-ton Insley, 75' mast, 80' boom; stiff leg derricks; 1—12-ton, 75' boom for hook work; 1—2-ton Pittsburgh, 26' bobm, 15' mast. Also a number of wood stiff leg derricks, 1 to 5-ton capacity.

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55—Electric ranging from 20 HP up to 125 HP, consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgerwood and National.
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Steam, ranging from 8 HP to 60 HP, single, double and triple-drums; all standard makes.

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4—7-ton Plymouth type 2, Model D. L. 24" gauge locomotives, power gasoline engines.
3—7-ton Whitcomb type MO 24" gauge, power gasoline engines.
1—7-ton Plymouth 24" gauge type 2 Model HL power gasoline engine.
1—3½-ton Plymouth 24" gauge Model A L 105, gasoline power.
1—3-ton Whitcomb 24" gauge, type U T gasoline power engine.

PUMPS (Dredging)
1—10" Morris sand pump, Ser. No. 86864, cap. 87 cu. yds. per hr.
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1—6" Morris dredging pump, Ser No. 91802, cap. 1050 GPM @ 53' head.
1—6" Morris dredging pump, Ser. No. 180639.

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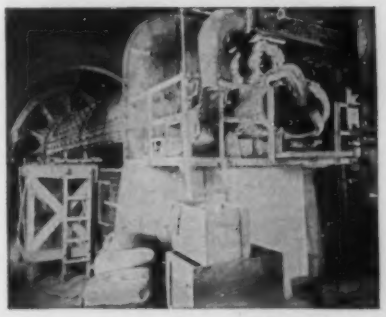

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120-Ton Steel Balls, ¾" to 5".

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Over 250 steel plate storage bins and hoppers, various sizes.

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All complete with blowers, feed pumps, feed water heaters, etc.

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1—No. 6 McCully gyratory rock crusher, style K.

5—No. 5 Gates gyratory crushers.

1—Mosser rotary clinker crusher.

1—No. 10 McCully gyratory rock crusher with extra gear, eccentric and bell.

1—Jeffrey 24" x 24" single roll coal crusher.

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2—W. F. Mosser & Son steel rotary dryers with 85" steel stack.

2—W. F. Mosser & Son steel rotary dryers, 72" x 60" dia., 60' long, bevel gear drive, each with counter shaft and 40' steel stack.

1—W. F. Mosser & Son steel rotary dryer, 72" x 60" dia., 55' long, bevel gear drive, with counter shaft and 35' steel stack.

1—W. F. Mosser & Son steel rotary dryer, 72" x 60" dia., 55' long, bevel gear drive, with counter shaft and 50' steel stack.

4—Ruggles 6' x 41' Rotary Dryers.

3—Ruggles 5' x 30' Rotary Dryers.

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Vulcan Iron Works Steel Rotary Kilns

3—Vulcan Iron Works steel rotary kilns, 8'6" x 7'6" dia., 125' long, fire brick lined.

2—Vulcan Iron Works steel rotary kilns, 7'6" x 7' dia., 125' long, fire brick lined.

7—W. F. Mosser & Son steel rotary kilns, 5'6" x 5' dia., 60' long, fire brick lined.

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1—Ingersoll-Rand 18¼" x 14" x 18" horizontal duplex air compressor, belted motor drive, with 3'6" x 20' riveted steel air receiver.

1—Ingersoll-Rand Duplex Air Compressor, 11" x 16" x 18" belted motor drive.

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Thousands of feet of bucket elevators, all sizes of buckets, mostly all steel encased.

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Steel Screw Conveyors, 8", in steel trough.

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ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	20"	5	1/8"	1/32"
42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
24"	4	1/8"	1/32"				

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

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ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
"B" WIDTH All Sizes | "E" WIDTH All Sizes
"C" WIDTH All Sizes | Sold in Matched Sets

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EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
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RUBBER HOSE

WATER HOSE
Each Length with Couplings Attached

I.D. Size	Length	per Length
¾"	25 feet	$4.25
1"	50 "	8.00
	25 "	6.25
1⅛"	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

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Reconditioned TRUCK MIXER FLEET

6—4-yard Jaeger Separate Engine Drive Truck Mixers mounted on A.C. Mack trucks.

2—3-yard Blaw-Knox Separate Engine Drive Truck Mixers mounted on B.F. Mack trucks —1937.

2—4-yard Blaw-Knox Separate Engine Drive Truck Mixers mounted on A.C. Mack trucks.

1—6-yard Jaeger Separate Engine Drive Truck Mixer mounted on Model DC 100 Autocar with dual range transmission—1940.

4—12-yard Heil steel dump bodies with hoists.

1—Buffalo-Springfield Roller—3-wheel, 10-ton with scarifier—Serial No. 12571 — gasoline powered, 2-cylinder engine, approximate year of manufacture—1928, approximate cost new—$4500.00, excellent condition—guaranteed.
PRICE — F.O.B. CORONA, NEW YORK $3500.00

1—Buffalo-Springfield Roller—2-wheel tandem—8-ton, gasoline power conversion—Serial No. 3997, 4-cylinder gas engine, approximate year of manufacture—1920, approximate cost new—$4000.00, good condition —guaranteed.
PRICE — F.O.B. CORONA, NEW YORK $2000.00

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1—No. 5 McCully Crusher.
2—Allis Chalmers Compeb Mills.
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50' elevator with 16" steel buckets on chain.
40' elevator, 12" malleable buckets on chain.
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Gears, sprockets, elevator and driving chain.
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10½" x 21" New England jaw crusher.
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8-ton Whitcomb, 36" gauge, gasoline locomotive.
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1	CRUSHING PLANT, consisting of primary crusher, Austin-Western 21x38 roller bearing with self feeder, powered by D13000 "Caterpillar" Diesel Engine; Secondary Crusher, 10x40 Good Roads, roller bearing crusher, powered by D8800 "Caterpillar" Diesel Engine; Reduction Crusher,, Traylor, 2'4" Crusher; one 70' centers, belt conveyor, 24" wide, belt driven from 10x40 crusher; one 70' centers, belt conveyor, 24" wide, powered by geared in head electric motor; one 120' centers, belt conveyor 24" wide, powered by electric geared in head motor; one 4'x16', 2-deck Secco Screen, powered by electric motor; one 3'x8', 2-deck New Holland Screen, belt driven by 10x40 crusher; one 15 or 18-ton truck scale; one Sullivan 210 cu. ft. stationary compressor (less power); one lot of drive belts, chains, sprockets, pulleys, etc.; the above is a complete crushing unit and now in operation; could be moved and reset without additional parts, etc., of any kind	25,000.00
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Butler 350-ton Concrete Plant, complete.
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Gyratory Crusher: K.V.S. 20, 27-S, 49; 22, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Allis-Chalmers Anaconda Type, 54"x24".
Jaw: 6x12, 9x16, 10x20, 14x24, 12x26, 13x30, 15x30, 16x32, 56x84.
Complete Rock Crushing Sand & Gravel Plants.

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Lot of screen sections for 4' and 5' revolving screens, also 4'x8' and 3'x8' vibrator screen sections, new and used.

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1 7½D Gates Gyratory Crusher 42"x30".
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1 Traylor Engr. Co. 5'0" dia. x 25' long Revolving Stone Screen, open end type, level gear drive.
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Monighan Walker Type Draglines, 2 and 3-yard.
550 H.P. ASME Boiler, 200 lbs., new 1927.
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1 No. 5 Kennedy Gearless Crusher
1 No. 19-S Kennedy Gearless Crusher
1 Conveyor 60' centers

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12—Koppel Steel dump cars 20 cubic yard capacity.
4—Western dump cars 6 cubic yard capacity.

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WANTED

Besser Super Vibrapac Block Machine, or entire cinder block plant equipped with Besser Super Vibrapac machine. Must be modern equipment. Will pay cash. Write Box B-12, in care of ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

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Where fine crushing is done in quantity, no crusher can approach the performance of the Short Head Cone. Investigate the merits of this unusual crusher.

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The vast armaments that are on their way have their beginnings in free America—deep in pit, mine and quarry where strong men set even stronger forces at work—using Ensign-Bickford Safety Fuse and Primacord-Bickford Detonating Fuse to make pounds of explosive blast out tons of coal and useful ores!

Yes . . . *Victory begins underground!*

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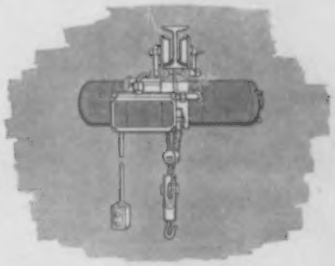
SIMSBURY, CONNECTICUT

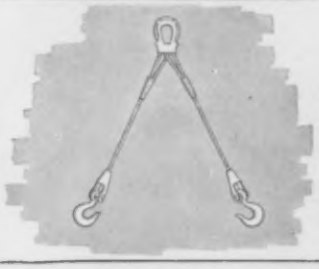
Primacord-Bickford
Detonating Fuse

Salient POINTS IN CMP Re: *Buying Wire Rope*

WHEN BUYING WIRE ROPE FOR INCLUSION IN A PRODUCT YOU ARE MAKING,



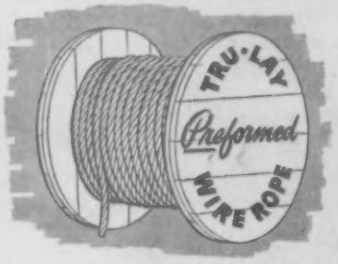
REMEMBER: Wire rope is a Controlled Material • Your orders should bear the abbreviated allotment numbers—such as: W- 8-20 • Preference ratings on orders bearing allotment numbers are valueless. Wire rope producers are required to fill authorized controlled materials orders without regard to preference ratings • The allotment number on a wire rope order must show the actual month of delivery and *not* the quarter in which delivery is required.



WHEN BUYING WIRE ROPE ASSEMBLIES,

REMEMBER: Assemblies consisting of wire rope and fittings are Class B if they are air-borne, but Class A if they are not • If Class A, you must furnish us with an allotment of the steel required for the wire rope, and for the fittings if they are also class A • If Class B, you must not furnish an allotment of steel for either the fittings or the rope • In either case, your orders must bear allotment numbers or they cannot be considered delivery orders for products containing controlled material.

WHEN BUYING WIRE ROPE FOR MAINTENANCE, REPAIRS, OR OPERATING SUPPLIES,



REMEMBER: Subject to the limitations imposed upon you by any "P" order under which you may be required to operate, and provided you produce a product or are engaged in any business in Schedules I or II of CMP Reg. 5, the symbol MRO on a wire rope order, followed by any appropriate certification, makes your order an authorized controlled material order, and • A preference rating is not required, because wire rope is a controlled material • Just be sure to observe the quantity restrictions stated in Par. (f), CMP Reg. 5.

WHEN BUYING WIRE ROPE FOR INCLUSION IN A PRODUCT YOU ARE MAKING,

REMEMBER: Wire rope is a Controlled Material • Your orders should bear the abbreviated allotment numbers—such as: W-8-20 • Preference ratings on orders bearing allotment numbers are valueless. Wire rope producers are required to fill authorized controlled materials orders without regard to preference ratings • The allotment number on a wire rope order must show the actual month of delivery and *not* the quarter in which delivery is required.

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AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT, CONNECTICUT

(May 20, 1943)

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Keep Your Motor Humming

electric - gasoline or diesel

Now that the absolute maximum of service is most important, you'll find that you get many more hours from your blast-hole drill motor, whether it's electric, gasoline, or diesel, if you give it the attention it needs. Here are a few simple hints to help you keep 'em humming.

Keep motor clean of dust and grime.

Inspect motor regularly; check insulation and brushes on slip rings frequently.

Watch operating temperatures closely. Check windings to see that excess dust is not accumulating. Make sure that leads at the terminal box have not become damaged.

Get the help of expert, experienced electricians if you're not sure what your trouble is.

Lubricate regularly following motor manufacturer's instructions carefully.

Fix all troubles IMMEDIATELY. Don't let little ones grow into big ones.

1. Inspect engine regularly and keep it clean
2. Warm up cold engine slowly.
3. On diesel engines, check injection nozzle pressures after 300 hours if engine is new, every 1,500 hours thereafter. *Keep fuel clean.* Storage tank and transfer containers or pumps should be kept free of both dirt and water
4. Flush out radiator whenever water gets dirty Be sure water added is clean.
5. Use good grade lubricating oil, following manufacturer's recommendations. Clean sump and change filter element frequently
6. Don't stop a heavily loaded engine abruptly
7. Get complete care and maintenance instructions from manufacturer or distributor and follow them carefully.

Keep 'em humming - Keep 'em drilling - Keep 'em fighting

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